

The **MINING CONGRESS JOURNAL**

Volume 10

JUNE, 1924

No. 6

INDUSTRIAL COOPERATION NUMBER

Justice the Keystone of Our Industrial Relations

**Better Relationship Between Employer and
Employee**

**Organization and Cooperation in American
Industry**

**Industrial Cooperation and Common Sense
One Way to Industrial Peace**

Reserves and Depletion of Natural Resources

**Mechanical Loading—Advantages and
Disadvantages**

Problems of Mine Electrical Men

National Exposition Coal Mining Equipment

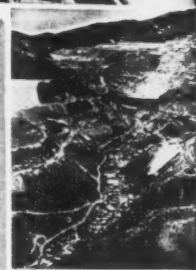
Mine Safety Measures

World Famous Placers

Legislative Review

Contributors:

*L. S. Cates, W. J. Loring, Hon. James J. Davis, Secretary of Labor, Paul Armitage,
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Changing Conditions Necessitate Redesign of Mine Cars



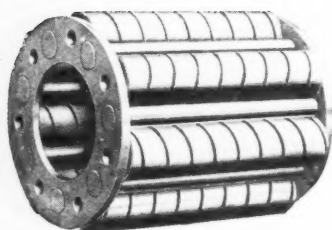
In the days of easy competition, coal costs could stand the extra tax due to wastefulness, but in these days of sagging markets only low cost coal mines employing economical methods can hope to survive.

Increased production usually results in lower costs, and one way to boost production is to install cars of greater capacity. Numbers of companies are taking this way out of their difficulty, even though it often requires an entirely new design of car, usually of the low, wide and long barge type for use in rotary dumps.

An operator recently told us that "these newer designs of mine cars with greater capacity make Hyatt bearings even more imperative. We used them under our old cars with complete success and couldn't get along without them now."

Many companies are throwing out entire lots of old cars, making the replacement with Hyatt bearing equipment especially designed by one of the many manufacturers who build Hyatt bearings into their mine cars.

If your production is dwarfed by small cars you can make it grow by having new cars designed which will carry more coal. And if equipped with Hyatt bearings they will have a lower power consumption than the old, small, plain bearing cars.

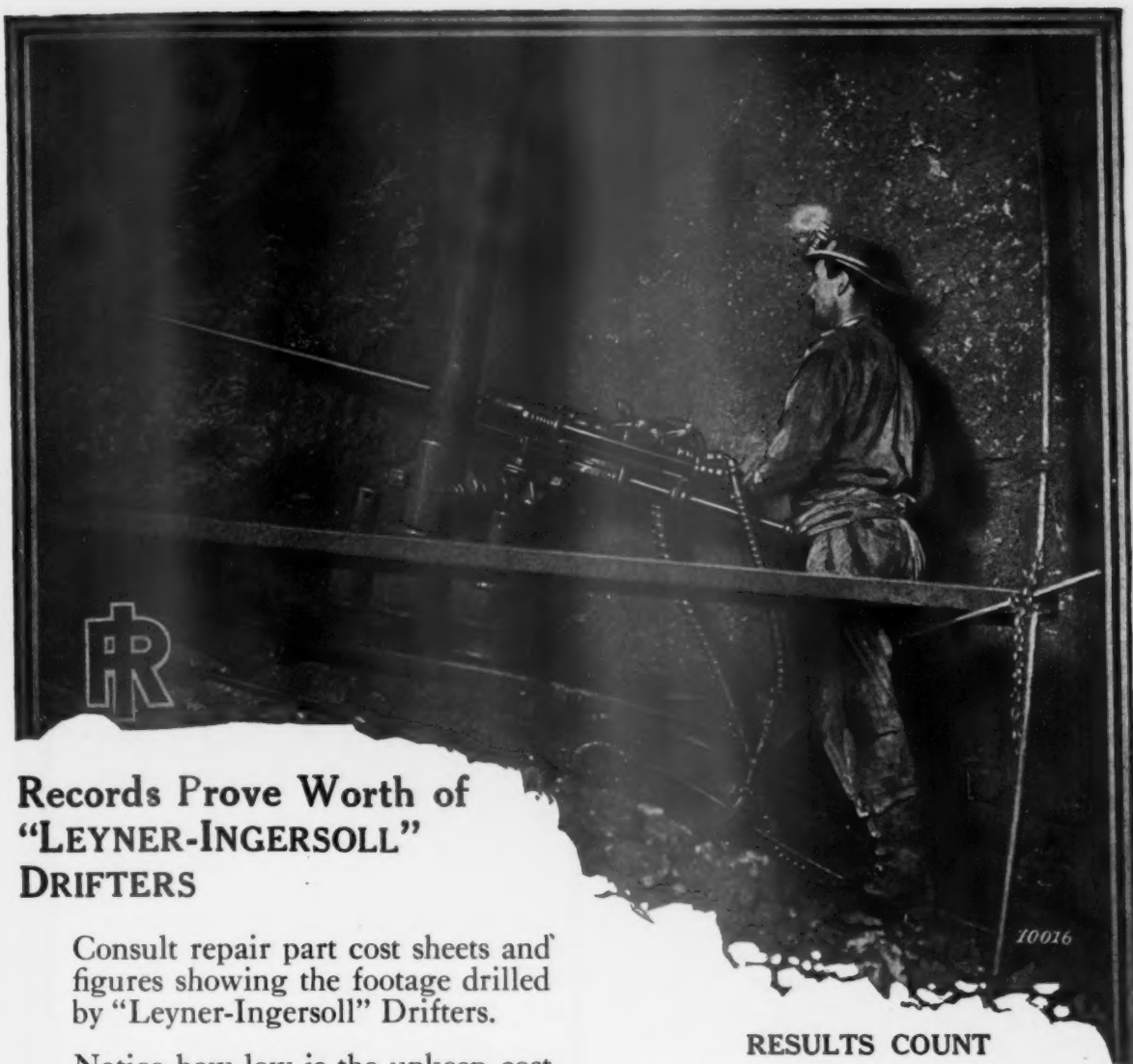


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Records Prove Worth of "LEYNER-INGERSOLL" DRIFTERS

Consult repair part cost sheets and figures showing the footage drilled by "Leyner-Ingersoll" Drifters.

Notice how low is the upkeep cost per foot drilled. These records will prove that "Leyner - Ingersoll" machines stay underground on the job. They complete their day's work and are ready for the next shift. This satisfactory performance is not for a day or a week, but is followed month after month over extended periods.

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Unsankinko, Chosen (Korea)
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by (Signed) ALF WELHAVEN

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Report of the Taio Gold
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Aero Brand Cyanide

THE MINING CONGRESS JOURNAL

JUNE, 1924

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Published Every Month by the American Mining Congress, Washington, D. C.

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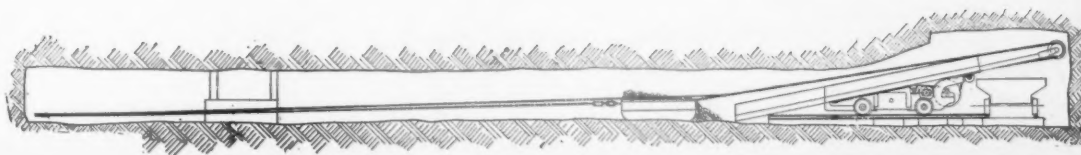
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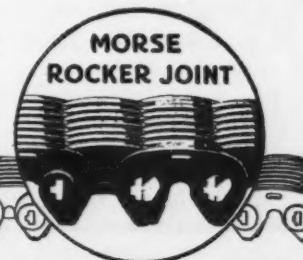
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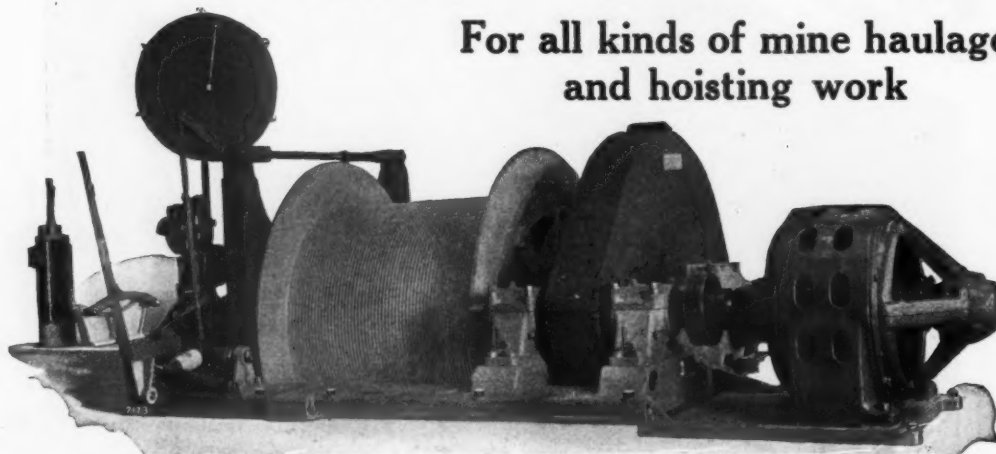
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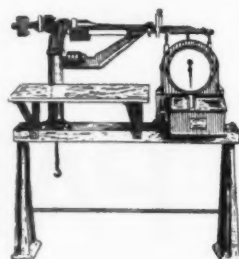
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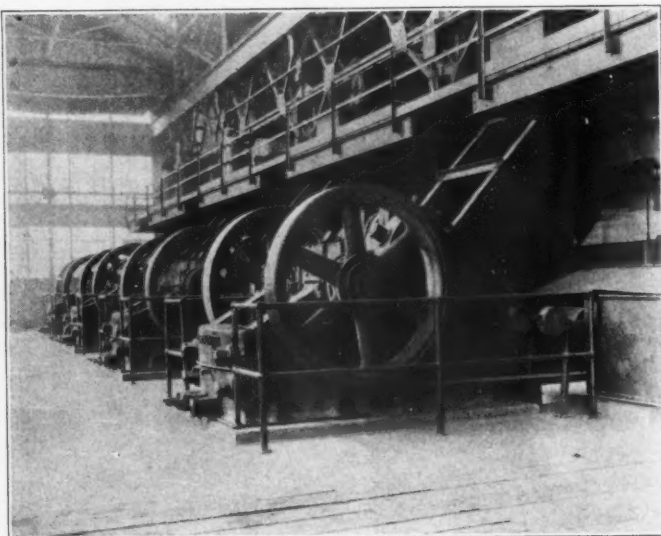
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"I'LL SAY"
she's some -

BULLDOG COUPLER

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"want my Boss"
to see this car"

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with wheels like that under um."

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exhibition booth at the Cin-
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To anyone who was unable to attend this great
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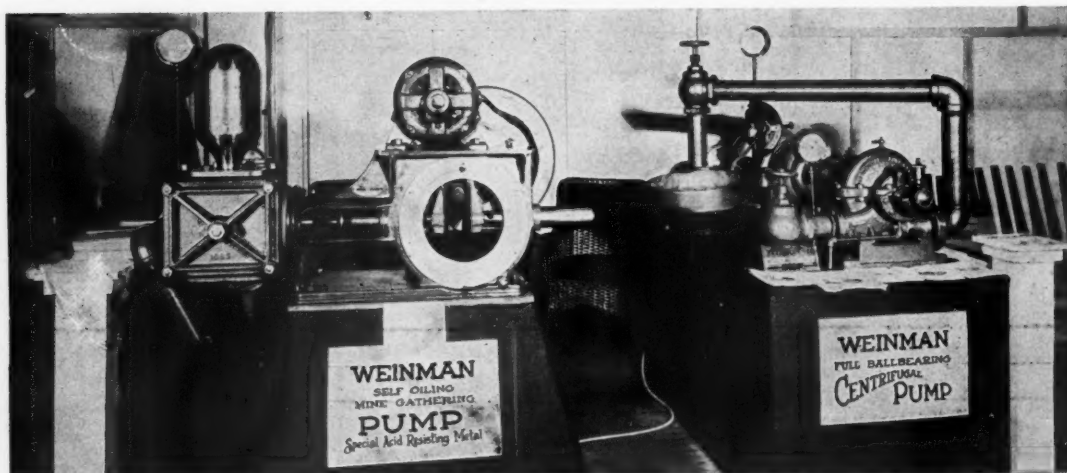
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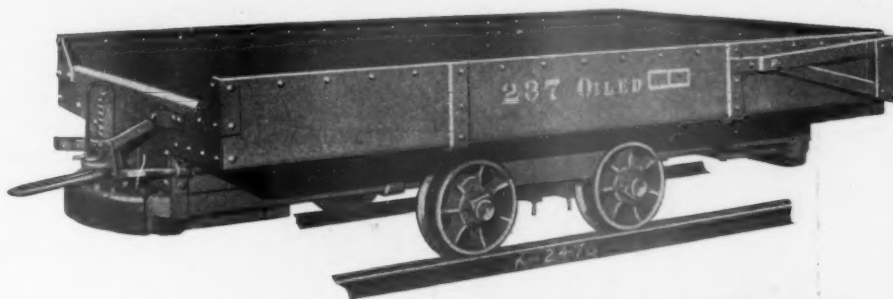
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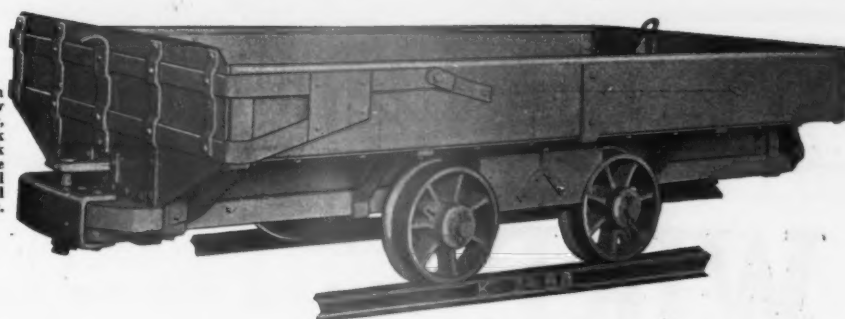
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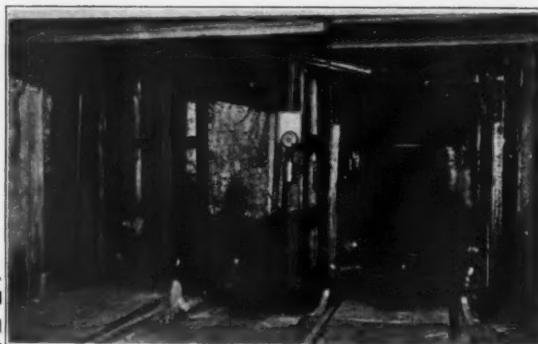
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Interior mining view of Homestake Mining Co., Lead, South Dakota. Upper picture, general view of operations. Photographs through the courtesy of A. Lease, Official Photographer, Homestake Mining Co.

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The Homestake Mining Company employs about 2,000 men and produced during 1923, 1,663,485 tons of ore, running an average of \$3.7784 per ton in value. The ore is very hard, and the results show efficient mining and metallurgical practice.

A workmen's committee composed of men from all departments, of which the Safety Engineer is chairman, meets monthly to report any unsafe conditions and practices observed, and devise ways and means for their disposition.

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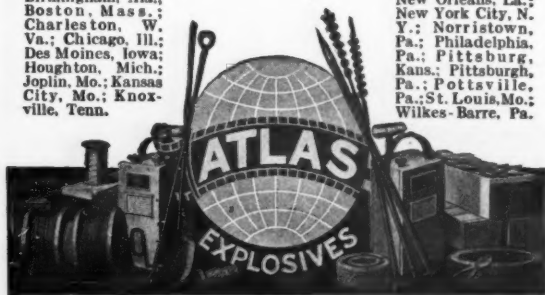
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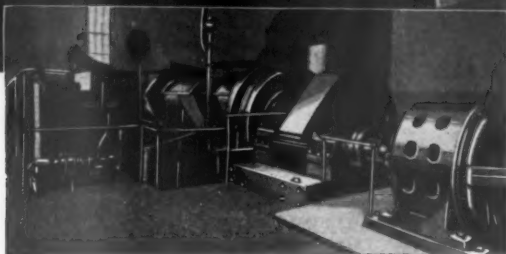
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THROW AWAY YOUR RED INK

Many operators have discarded old-fashioned methods of loading, and with Joy Loaders have pulled their mines over to the *profit* side of the ledger.

Joy Loaders are in service in practically every coal field, and are reducing production costs from 25c. to 60c. per ton.

You are interested in
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Load Mechanically

Cut Costs from 25 to 60 cents



The Joy 5BU Loader at left, with swinging conveyor, readily loads 5 tons of coal in $1\frac{1}{4}$ minutes regardless of position or height of the mine car.

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The Joy 5BU Loader shown on the left has marked up new coal loading records.

On Thursday, April 24, this machine loaded a 5-ton mine car in 1 minute flat.

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Rugged Strength and Durability.

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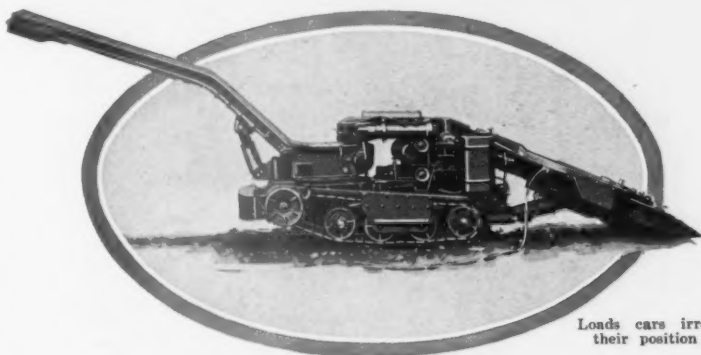
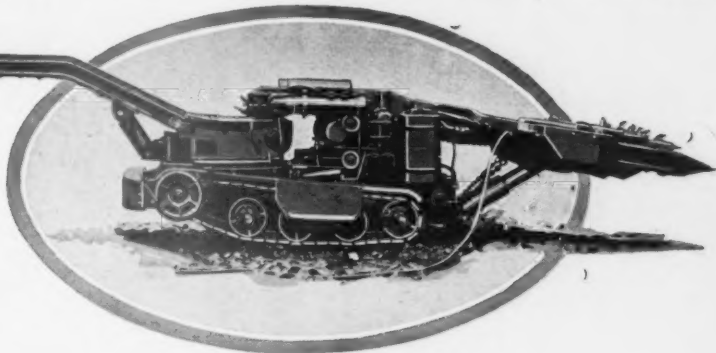
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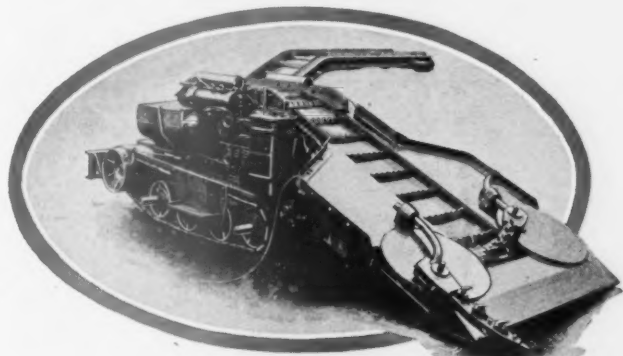
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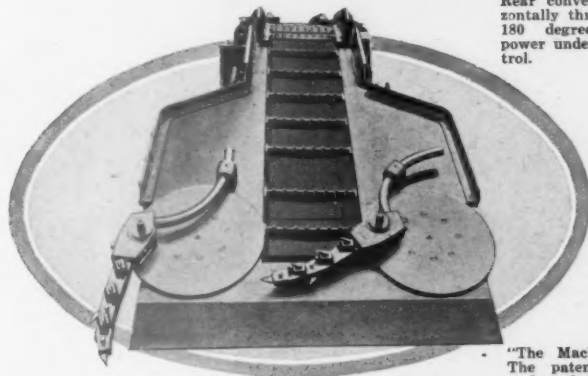
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Loads cars irrespective of their position or height



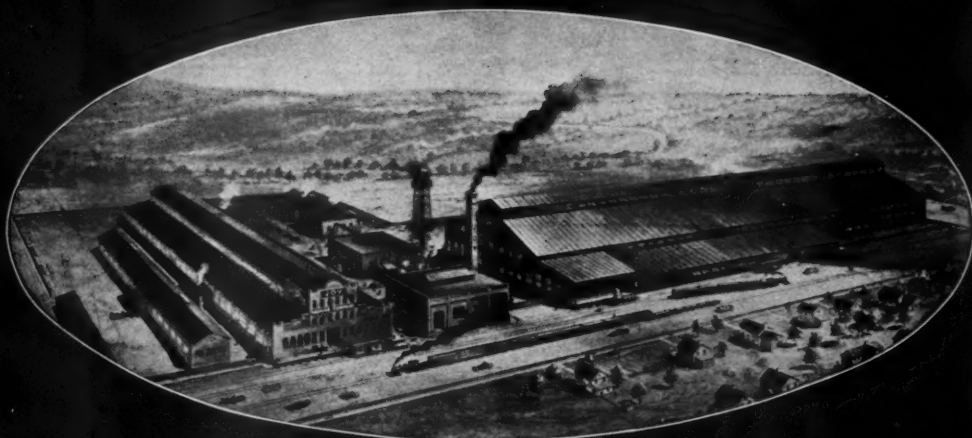
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"The Machine That Digs." The patented Joy digging and gathering mechanism is the feature that has made possible a practical mine car loader.

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More Proof!

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More than 200 Joy Underground Mechanical Loaders are in service in the United States today. The Joy Plant, at Franklin, Pa., which is shown above, is a tribute to new-day progressiveness in the coal industry. Coal operators, recognizing the vital value of Joy Machines, have made it possible. Joy Machines will shortly be produced here at the rate of 25 or more a month.

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The MINING CONGRESS JOURNAL

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THE AMERICAN MINING CONGRESS

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Single Copies, \$0.30

VOLUME 10

JUNE, 1924

NUMBER 6

APPLICATION OF A COMMON PRINCIPLE

WHY should capital or labor shy at the idea of industrial cooperation? The whole idea is primarily based upon a premise that both are familiar with and which each take advantage of in practically every other phase of their existence. Its simple purpose is to make it possible for employers and their men to get together across a conference table and thresh out their problems, difficulties and misunderstandings without outside interference. Every business relation in industry, except the labor relation, is settled in this way.

An article in the current issue of the MINING CONGRESS JOURNAL says, "Whether men are working for dollars or have their dollars working for them, they are all human beings and their relations are measured by human nature and human attitudes. Any plan for industrial relations adopted must aim not at the bargaining spirit but at the cooperative spirit, not at enlightened self-interest but at enlightened mutual interest. Any plan ought to be satisfactory which inculcates and develops a genuine desire on the part of all concerned to work out fair play and square dealing. Over the conference table each endeavors, through justice, to open not a way out but an avenue of mutual approach, so that the management, the subordinate officials, the foremen and the men come to see one another and the conditions of the organization as they are; and they arrive at a recognition of their mutual rights and mutual obligations."

The conference table will solve most labor problems. When the operator raises money for the financing of his project, what is his first effort? The forming of the closest possible contracts by the closest possible personal acquaintance with the sources of the necessary funds. Thus is the financing of his project assured. When he wants to sell his product, he forms the closest possible relations with the buyers. He employs a sales manager who has such relations and who can continue to build them up. Why, therefore, in dealing with the largest item of expenditure in mine operation, namely, labor, is not this factor and this method of treatment equally effective and equally important?

This cooperative relationship should exist between employer and employe in the mining industry. It is the relationship which has broken down because of the increase in size of operations and the lack of personal contact thereby necessitated. The thing to be accomplished by industrial cooperation is the reestablishment between employer and employe, through their paid executives—the general manager, the superintendent, the foreman—of the same close personal contact that makes effective the other features of the business. The same effectiveness will result to the mutual advantage of employer and employe.

AN EPOCHAL EVENT

TWO great mining organizations—the National Coal Association and the American Mining Congress—during the week May 12-17, held simultaneous meetings at Cincinnati, Ohio, to consider ways and means for meeting encroachments upon the mining industry from without and for coping with disturbing factors that cause strife and turmoil and misunderstanding within the industry.

Most of the speakers sounded notes of optimism, although there were some speakers and delegates at these meetings who, because of adverse market and other conditions, viewed the present situation with pessimistic forebodings. But, generally speaking, a feeling of optimism prevailed.

The condition of the mining industry today does not warrant pessimism or impatience. The history of the mining industry records many periods of depression and declining profits which were always followed by periods of prosperity and advancing profits; but when these periods are averaged, we find the trend has been steadily upward, and that the good times outweigh the bad.

At the sessions of the National Coal Association, we found operators discussing constructive policies relating to fuel needs of the public, problems of labor relations and governmental activities in connection with the coal industry. At the sessions of the American Mining Congress we found questions of economical mine management and cost-saving machinery being discussed. At joint meetings of the two organizations, questions relating to the improvement of employment conditions and elimination of causes of strikes were the important topics for discussion.

With the coal operators and coal mine managements so thoroughly anxious to supply the fuel needs of the American public at minimum prices; to improve labor relations by the adoption of policies that will eliminate the causes for strikes and provide means for bringing about the settlement of misunderstandings between employer and employe; to eliminate the disturbing factors that furnish arguments to the advocates of rigid government supervision or government ownership, the coal industry apparently is reaching out toward a satisfactory solution of its greatest problem—that of convincing the public of its sincerity and honesty of purpose.

The cooperation of these two national organizations in seeking the most satisfactory solutions of the problems of the mining industry is an epochal achievement. The leaders who are responsible for bringing about such cooperation deserve the appreciation of the industry and the public. Such cooperation is the best guarantee against unjust encroachments upon constitutional rights and against the attacks of selfish demagogues.

When the American Mining Congress holds its regular annual convention at Sacramento in September, it is believed that this idea will grip the leaders in the mining

industry and that all branches of the industry—particularly metals, coal and oil—as well as all parts of the country, will be represented; so that a constructive program for the erection of proper safeguards to the welfare of the industry, in which all will have a part, may be evolved.

THE FUNCTION OF GOVERNMENTAL BUREAUS

AT THE meeting of the National Association of Manufacturers, recently held in New York City, many criticisms were leveled against what is known as "bureaucracy."

It was intimated that the continued aggressions of governmental agencies are interfering vastly with the business and industrial life of the country and a general feeling was manifest against bureaucratic government.

Perhaps no question in the practical working of our government is of greater importance. The growth of bureaus is but a natural result of the frequent changing of government officials. Members of Congress come and go. The term of the office of the President, by precedent at least, is limited, and the frequent changes in public sentiment in the various communities result in a change of those officials which were designed by the makers of our Constitution to control the affairs of state. The bureaus were but natural developments of this situation in which officials change but the government continues.

While changes are possible in the bureau chiefs, the personnel of these bureaus continue in office, partly because of their growing value to the government, partly because of increased experience, but in a great degree to the protection of the Civil Service Law. This security of position tends to the development of an independent authority which is entirely repugnant to a government in which its officials are supposed to be the servants of the people.

In the discussion of the principles of government by Mr. James A. Emery, before the National Association of Manufacturers, he called attention to the difference between the respect which is paid to a uniform in monarchical countries in which the citizens must remain subservient and in this country in which the public official must respond to the wishes of his constituents if he hopes for a reelection to his office.

The personnel of governmental bureaus not being obliged to thus protect their employment are said to be taking on the airs and authority of the officials of the monarchical governments and to be continuously assuming positions of superiority to which their only claim is the permanency of the position which they hold.

The quotation frequently applied to office-holders in foreign countries is gradually becoming a fact in this country, namely: "Hast seen a dog bark at a beggar and the beggar run? 'Tis a symbol of authority; the dog is in office."

The MINING CONGRESS JOURNAL regards this trend of discussion as partly right and partly wrong. We have continuously, and for many years, opposed the tendency toward centralization of power in the federal government. We have contended that home rule and government through representation is the basic rock upon which this splendid governmental edifice rests; that the rights of the people of far-off Alaska never have been, never will be, never can be successfully administered from Washington; that the people of each state of the nation must preserve their own autonomy; their police powers must not be interfered with. We have insisted that this right of home rule is vastly more important and more necessary to the continuance of our nation than any moral issue which can possibly be raised. Good

morals do not thrive under poor government. The government is the foundation and any tendency toward depriving the localities of their right to self-control and placing that power in the central government will in the end destroy our governmental system.

We do believe, however, that bureaus are an essential part of a changing government and that any proposal to handle governmental affairs by any different method will be a failure, and we also believe that a continual grasping of increased power, the continual effort to exercise new functions by the various bureaus of the federal government, is a growing menace which should receive the serious attention of the American people.

Every successful business corporation continues its employes in office, promoting them in accordance with their service, loyalty and ability. Frequently the one-time office boy becomes the managing head of these great institutions, but at no time on the road from the lower to the higher position does the subordinate act independently of the head of his organization. A proper criticism of bureaus is the independent action, the desire to find employment for men who have been brought into government service to meet a real need but who are kept in employment continuously after the need has been met which brought them to the governmental service.

Well may the American people awaken to the importance of continuing that form of government under which our great prosperity has been made, but in doing this the personnel of its governmental agencies must remain the servants and not the masters of the people.

LAW AND TYRANNY

THE principle that "Ignorance of the laws is no excuse" has long been a basic tenet of jurisprudence familiar to every school boy. How much longer can this truism remain true? Not only the Congress of the United States, but the legislatures of forty-eight separate states and the judicial functions given to various governmental commissions continue to build a towering structure of superimposed legislation consisting of thousands of new laws every year.

There was first in the history of mankind the law of the ruler. The word of the king was law. This was tyranny. Under the Magna Charta, wrested from King John, the Anglo-Saxon people struck their first blow against tyranny. Thereafter for more than seven centuries, and culminating in the early development of our own Republic, the history of law marked the release from this tyranny. Law during this period governed the relations between man and man and the intervention of the Government was to protect the equity and justice of those relations. This was freedom.

Today we are having an increasing structure of law which regulates not the relations of man to man but the relations of man to government. This is a new and enlightened form of tyranny. We are building up a legal structure which levies double taxation on property owned in adjoining states, which makes the same act legal in one state and illegal in another—a structure which determines the legality of an action entirely on terms of technicality and not on terms of equality. We are in a bewildering maze of legality governing the simplest transactions, which is already making it requisite on every business organization to maintain a staff of attorneys to carefully weigh and determine the legality and possible liability under the law for the most simple transactions of commerce.

It is a reasonably safe assertion that every able-bodied active and upright citizen, at least once every forty-eight

hours, violates some municipal, state or federal statute which renders him liable to a fine, if not imprisonment. Under such circumstances the knowledge of the law and the respect for the law, which are incumbent on these citizens, are certainly diminished.

THE WORLD MEASURE OF VALUES

A RECENT newspaper comment congratulates Belgium upon the fact that she retains possession of her gold mines in the Congo and mines her own gold entirely independent of the capacity of those who under our system might have owned her gold mines and controlled the output of this commodity, so necessary to the reestablishment of her credit and currency. To this fact is given much of the credit for Belgium's more rapid industrial recovery. The situation might easily be most desirable and might enable a country with cheap labor to quickly rise from bankruptcy to a position of financial independence. But to a country like the United States with a high price level for labor and all the commodities which labor creates, the situation this creates is entirely different.

In the United States the cost of producing gold is higher in relation to its value than any other product. Notwithstanding the almost irremedial loss occasioned by the closing down of a shaft mine, practically all such mines which produce gold only are closed. Our present gold production, about one-half the prewar amount, comes mainly as a by-product with copper, silver, lead or other minerals.

The burden on gold is a burden upon the production of these associate minerals. Gold cannot again resume its one time production in this country at the present high price levels. The time must come when the highest possible production will be required. The world's total supply of monetary gold is about the same as in the prewar days. This gold is now called upon to support a credit many times greater than before the war. The result in many countries is unsupported and therefore worthless currencies, or partially supported and therefore depreciated currencies, dependent upon the amount, if any, of gold held by the particular country cited. These countries some day must be restored to stable conditions—stable at some level of prosperity. That surplus of gold now held by the country, which is now both her boast and her peril, must some day go back to those countries which need it. The lower actual wages are forced by a lack of gold, the greater will be the pressure upon our markets of the low priced goods thus made available. The law of supply and demand will in the end again control. No tariff wall will ever be built which will force starvation upon a production and organized people. No tariff wall can be built which will keep from a high priced market the commodities produced elsewhere at starvation wages. The peril of too much gold will sooner or later be relieved and our own credit requirements will by that same law of supply and demand force the operation of our gold mines. The road is through a swamp of depreciation. Are we ready to face the alternative of a sane and sensible solution of the gold problem? Are we ready to suffer the consequences of a breaking down of our price levels with the unemployment and the stagnation and despair which this process necessarily entails?

Some day the gold mines of the country will be called upon to supply a need for more gold to maintain and support our credits—and its cost of production will be on a par with the value of the output.

The selling price of labor in other fields of production cannot always remain very much above the price of labor

involved in the production of gold. Gold still is and will remain the measure of value throughout the civilized world.

COAL'S ENVIABLE RECORD

A SPEAKER at the annual convention of the National Coal Association said that the bituminous coal industry, as it now stands, is valued at approximately twelve billion dollars. It is capitalized for less than four billion dollars.

The figures represent only the operating function of the industry; they take into account only the land actually under development and immediately in reserve, but attached to going operations. Of course, the figures are and can be only approximate because no conscientious effort has ever been made at such a valuation of coal mines as the Commerce Commission has attempted for the railways. However, the author of the figures seems to have employed a conservative method of calculating. Perhaps he is as nearly accurate as any such statement can be.

The significance of these figures is that they show that the bituminous industry is capitalized for less than one-third of the present value of its assets.

By contrast, the Commerce Commission has valued the railways at about nineteen billion. These assets have been capitalized by the railway managers—under most rigid public supervision—at about fourteen billion. The railways, therefore, have capitalized nearly three-fourths of their assets.

When the bituminous industry is being criticised sharply for some of its conduct, and when its critics are seeking things to criticize, this enviable record should not be overlooked.

It may be true—although there is room to doubt it—that the bituminous industry is overdeveloped in the sense that it has opened more mines than are necessary to meet the actual daily needs of the country. It may be true that more miners are employed than are necessary, if all the miners should work diligently—an hypothesis which begs an important question. It may, therefore, be true that, compared with the needs of the country for coal, there are both too many mines and too many miners. This means that, in a highly theoretical sense, the industry has sinned economically by opening so many mines that each one cannot be prosperous. It means also that too many men are seeking employment in coal mines and therefore that all of them cannot get all of the work they would like to do. Those are hard questions to try to pass judgment upon.

The one concrete fact which is tangible and which stands out is that there has been in a financial sense, no exploitation of the coal field. No charge has been or can be made that "big money" has exploited this industry and the public by watering the stock of coal corporations. All bituminous coal companies have been undercapitalized rather than over-capitalized. This is apparent on the face of it when it is said that the assets are at least three times the size of the capital issues.

This has a tremendous significance when considered in the light of the credit of the average bituminous operation. Sometimes the statement is loosely made, even by representatives of the Federal Government, that the credit of coal companies is decidedly doubtful. This assertion was based on the assumption that overdevelopment brought ruinous competition, and all that sort of thing. However, when an industry has three dollars of assets for every dollar of capital, it is apparent, at once, that the financial position of that industry is technically sound and unchallengeable.

This means that if the industry has committed any financial sins, those have been against the operators of the property by failing to reward them for their effort, rather than against the public, which has subscribed for the capital issues. Any industry which can conduct a business for nearly 120 years and still have three dollars of assets behind every dollar of capitalization has pursued a financial policy which is praiseworthy because it is sound.

THE FUTURE OF COAL

IN ALL classifications of industry coal is still listed only among the mines and quarries. That is, it has no other line of activity that is recognized. In essence, coal is merely a quarrying industry. Thus its major and almost its sole activities, are confined to extracting a natural resource from its place in the ground. This is primitive; in a very large sense, it is extremely crude. Essentially it is subject to definite limitations upon possible profits because the people will pay and can afford to pay but little for the crude work necessary to extract a rough material from the ground. Coal mining, therefore, so long as it remains a mere quarrying industry, must have a profit limitation fixed by what is proved possible by the quarriers of stone, of sand, and of gravel.

However, the quarrying of coal is but the beginning of many possible developments in the coal industry. There is the possibility of expanding into the chemical industry. The chemists have already proved that coal contains at least 1,500 separate products, each one of which can be extracted in a mechanical way and sold commercially. The Germans have built a great industry on only 15 percent of tar which is obtained from coal. America, having a larger volume of coal of a better quality, can do everything that the Germans have done, and more. The possibilities in that direction are practically unlimited.

In addition, a vast improvement is being shown in the transmission of electrical energy over long distances by wire. The transmission of electric power has become entirely too much of a factor to be ignored. We started to get economy by using it inside the factories. We then extended the system to cover cities. Today we are using it over big areas. Great development must be expected in that direction. It remains for the coal industry to decide whether it is going to supply cheap coal to those who translate the latent energy in coal into electrical energy or whether it will itself translate its own coal into electricity and distribute the product. If the latter decision is reached, coal men must own, by cooperation, the trunk lines which transmit the electric power. And, it might be added, the coal men will own trunk lines or the trunk lines will own the coal mines.

This means to say that the coal industry will soon have to decide whether it is going to continue in the quarrying business and allow others to develop the chemical and electrical phases, or whether it will use the quarrying business as a foundation for its own enterprises in these other directions.

The situation is obviously such that coal men must expand into these larger fields. They cannot sell old mines, at a profit, to the electrical companies. The electric companies can open new mines at less cost. The coal industry on the other hand cannot afford to lose this advantage. Also, the coal industry has a peculiar advantage. It has assets which it can readily capitalize. Thus it can raise any quantity of money that may be necessary to develop either the chemical or electrical

industries. Even on the present value of its plants—and conceding no value at all to any plants to be erected—the coal industry has uncapitalized assets of close to eight billion dollars. With this volume of borrowing power in the present industry, it need not worry about the capital needed to expand into the larger fields. Thus, if the coal industry wants to go into the by-product industry, or the electrical industry, it can readily take its present plants to the bank or to the people and raise any quantity of money needed.

The coal industry heretofore has an enviable record in that it gave to America the cheapest power on earth. It was on this cheap power that America won the first place in the industrial world. Low-cost power in future promises to be electrical power. This will be supplied by someone. Whether the coal industry will do it, or whether it will merely supply cheap coal to those who do it, must be for the industry to decide. The opportunities for profit seem, however, too obvious to be ignored.

GETTING TOGETHER

THE most inspiring "get together" ever held by the different factors of the coal industry took place at the Cincinnati convention. The enthusiasm which marked this convention was the result of the inspiration awakened by a joint consideration of mutual problems of operation and management. There is alike an inspirational factor in hearing the expressed views of others on mutual problems and in expressing our own views and thus crystallizing unformed ideas into action and progress.

There is a great educational value in "getting together."

The advantage of education in schools, as contrasted to self-study, lies in the interchange of opinions and the personal contact. The value of a convention is the same kind of value. The "getting together" of operator and machinery manufacturer through exhibits, through joint committees, through personal conferences, means improved methods, means savings, means the adapting of machinery to new uses and increased safety and efficiency in operation.

Each man goes home with a better understanding of his own problems and with a keener appreciation of the other man's viewpoint. Old acquaintances are renewed, new ones formed, and the milk of human kindness kept sweet a little longer. Conventions are well worth while.

THE REVENUE ACT OF 1924

THE 68th Congress has temporarily disposed of the problem of tax revision. We say *temporarily* because of the general feeling that prevails that the revenue act of 1924 is an unscientific, makeshift measure and because bonuses, increased pensions, and other measures requiring large appropriations may create such a deficit that Congress, at its next session, may be compelled to find additional revenues to meet the vast expenditures it has authorized or will authorize before it adjourns.

The country will stand just so much jockeying with the question of taxation, before a reaction sets in that will compel politicians to keep hands off and permit the matter of taxation and revenues to be handled in a sound, scientific and conservative manner. Such a reaction is now due. The taxpayers of the country are going to demand an explanation.

JUSTICE IS THE KEystone OF OUR INDUSTRIAL RELATIONS

Fair Play And Square Dealing Best Basis—Misunderstanding, Distrust And Suspicion Eliminated Through Conference With Forces Involved

By LOUIS SHATTUCK CATES*

ONE of the things which impressed me most during my years of effort in Arizona, is the inscription on the wall of the court room in the Federal Building at Phoenix: "Study without thought is useless; though without study is perilous." Those words are as true today as when they were written by Confucius five centuries before Christ was born. They are applicable to every phase of our activities, including the problem of present day human relations in industry. Far too much discussion of this vital question emanates from people speaking not from observation, not from experience, not from personal contact with the situation, not from a practical study of the situation, but from a more or less thoughtless assimilation of second hand information gathered from indiscriminate promiscuous reading. Such people advance popular theories which serve to entertain, but which are barren of concrete results. When they confuse "collective bargaining" with collective harmonious understanding, and mistake cooperative effort for "effectual control of rivalries," they simply expose their ignorance, or misuse terms, forgetting that words are things, and those who misuse them frequently deceive themselves as well as others.

Naturally I see the structure of industrial relations through the eyes of an engineer. The professionally trained man looks for facts as his foundation, and grounds his work only upon facts. What facts have we? Whether men are working for dollars or have their dollars working for them, they are all human beings and their relations are measured by human nature and human attitudes. Years ago, when industry was carried on principally by individuals or small groups of men, there was a personal touch of contact between the employer and employees which generated and maintained cordial and friendly relations, and a mutual recognition and respect for each other's rights and interests. With the press and intensity of modern conditions, great units became indispensable to trade, and business came to be transacted on a gigantic scale, through the instrumentality of immense numbers of workmen, backed by large aggregations of capital. The owners of that capital necessarily entrusted the management of the business to some one or more executive officials, who in turn had to work through sub-

ordinate officials and foremen. Inevitably, the personal touch, the intimate, friendly contact between the industry's management and its employees was lost. Very frequently the executive, the manager, regarded himself, in the language of Herbert Hoover, as but "a buffer between capital and labor," and how-



Louis S. Cates

ever well trained technically, he was not thoroughly imbued with a human and judicious attitude. Only too often the subordinate official was impressed with an exaggerated idea of his own importance. Almost uniformly foremen were entrusted with extensive and arbitrary, even almost autocratic power over the workmen. The result of that system was that there was a more or less lack of uniformity or honesty of purpose and suspicion, mistrust, indifference and disloyalty crept into the organization. Unconsciously, the owners and the workmen drifted further and further apart. Conflicts and differences arose, wherein, in many instances, the executive, the manager, instead of undertaking to remove the difficulty on the basis of a square deal and principles of right and justice, followed the line of least resistance, took the easiest way out, and temporized with whatever seemed to be most expedient for the moment, overlooking the ultimate results of the settlement on the future relations between the factors of the organization. The

consequence was chaos and darkness in industrial relations.

What does an engineer do when he encounters a weak spot in his structure? Tear it all down? Certainly not. He finds the cause and repairs, reinforces and strengthens the work at its point of weakness. That is likewise the method an engineer applies to the problem of industrial relations. He analyzes the situation and seeks a method of restoring that which was lost, the personal touch between the owners and the men. He finds a manager who is a real one, who endeavors to act dispassionately and to search for truth with a vision unclouded by prejudice or preconception, a manager who recognizes that scientific approach is unfriendly to intolerance, a manager who can regard himself not merely as a passive buffer, but as a vital part, if not the vital part, of the coordinate mechanism of the organization. Next he dispenses with the services of the subordinate officials who clogged the organization machinery by their vanity or their disinclination to deal with the workmen in a spirit of absolute fair play. He selects a foreman, not for his physical prowess as a pugilist, or his instinct as a policeman, but for his judgment of human nature and his ability to win the confidence of his men; and having so selected him, is careful to put him among his men. Now he has three-fourths of his unit in an attitude conducive to harmonious and continuous productivity; and his problem is reduced to bringing the remaining fourth, the workmen, to the same plane. What plan is to be adopted to accomplish that objective? It is obviously impossible for anyone to prescribe a plan which will work out the desired result in every organization, because organizations differ as widely as do their varied activities, and as widely as the qualifications of the men who comprise them. However, the engineer knows that any plan adopted must aim not at the bargaining spirit, but at the cooperative spirit, not at enlightened self-interest, but at enlightened mutual interest, and he knows that any plan ought to be satisfactory which inculcates and develops a genuine desire on the part of all concerned to work out fair play and square dealing. Accordingly, the engineer devises a plan whereby regular conferences may be held between the forces involved, at which conferences misunderstandings may be dissipated and suspicion and (Continued on page 240)

*Vice-President and General Manager of the Utah Copper Company.



Carson Hill Gold Mines, Melones, California

BETTER RELATIONSHIP BETWEEN EMPLOYER AND EMPLOYEE

Proper Housing Vitally Important—Confidence In Employer Must Be Maintained—Employers Themselves Must Understand What Constitutes Industrial Cooperation—Some Form Of Shop Committee Plan Should Be Adopted

By W. J. LORING

Pres., Carson Hill Gold Mng. Company,
San Francisco, Calif.

IN these days of high production costs industrial cooperation is more than ever before uppermost in the minds of employers of labor. It is not too soon that this great question should find employers of labor carefully giving consideration to the betterment of conditions, with the ultimate result of benefiting both employer and employee. One can scarcely be benefited by any change that is made, without benefiting the other. It is impossible to benefit the employee unless the employer is also benefited.

If this be true there can be no question as to the necessity for industrial cooperation, and it would appear, from the strides that have already been made, that better understanding on both sides is gradually being enjoyed. Much, however, remains to be done to come to a complete understanding and to eliminate thereby any chance for misunderstanding that may endanger the peaceful relationship between employee and employer. The employee should be placed ahead of the employer because, in cases of serious dispute the employee uses his most effectual weapon in actually ceasing to function along the lines of his employment, thus creating a greater breach than was the case when the misunderstanding first arose.

It is apparent that with the great amount of study that is being given to industrial cooperation, employers of labor will eventually come to a better understanding, so far as labor is concerned, not only so far as the actual performance of duty is concerned, but the causes that lead up to the performance of better service by labor.

There is something aside from the performance of labor during the actual eight hours of employment that an employer must take into consideration.

Many employers have already recognized this great principle—that is, the employment of the employee's time during the sixteen hours free to him to use as he sees fit. Without any desire on the part of the employer to interfere with the liberty of the employee during this period there should be sufficient—and there is sufficient interest taken by many employers—in the direction of providing ways and means for the satisfactory employment of the sixteen hours' free time to which the employee is entitled.

Many serious disputes have arisen between employee and employer, due to the one very important question of housing. It has been my privilege to note various industrial conditions throughout the world, and it has been predicted by me that disputes were sure to, sooner or later, make their appearance between employer and employee, simply because no self-respecting man can respect himself and those dependent upon him when living in a hovel. It has been my experience to see families, in the tender years of their existence, numbering no less than six children, a father and mother, living in two rooms in a civilized community. When attention was called to this condition the remark, many years ago, was to the effect that the employee could provide better quarters for himself if he so desired, that most of his time was spent on the street, in recreation grounds, or at the bar (this was before prohibition), and it did not concern the male member of the family a great deal. Every one of these arguments in my opinion was absolutely without foundation of fact. The princi-

pal reason for the male member of the family to spend his time on the street, recreation ground or at the bar, was because there was no comfortable place and no atmosphere of contentment at the place he should call home. Under these conditions nothing but dissent could be created. The man who goes to work carrying his lunch bucket from such conditions cannot render a good account of himself to the employer. It is surprising that results have not been even less satisfactory than they have finally become, before this great question of industrial cooperation took hold of the employer to such a degree as to make provision, where it is possible, to obviate the employment of men who are not satisfied at home and with their work.

One of the arguments against providing satisfactory, sanitary conditions for the employee's family to live in, is that they would not take care of such conveniences if provided. They surely will not be taught to take care of suitable living conditions if they are not provided with them.

Industrial cooperation means education. It is necessary to take some interest in educating the employee's family in order to obtain the condition that is most desired by all of us. Education aside from the public schools is what I mean; education along the lines of how to live at home, how to take care of the home and make it a place that the husband and father will look forward to with some degree of pleasurable anticipation of a pleasant reception and a comfortable sixteen hours, if he desires to stay at home. I believe that many a man will stop at home and not spend his time on the street, recreation ground or in the bar, if his home is made attractive, because his family will eventually be so satisfied that he will have more pleasure

at home than on the street, recreation ground or bar.

Great care must be exercised in making provision for all of these changes and paternalism should be avoided. It is cooperation we are striving for. They should be done moderately by the employer, otherwise at the start suspicion will be created, because in many cases such a thing as cooperation by the employer is unheard of in any part of the world.

It is probable that an employe of a mine in California has worked in one hundred mines in various parts of the world during his lifetime, and he would have one hundred different conditions to labor under. He would have one hundred different dispositions to put up with.

I often wonder whether the employer, when complaining of inefficient labor, takes into consideration the training of his employes—which has probably been in the hands of one hundred teachers, all of whom could not have been trained along exactly the same lines; all of whom are not born into this world with the same temperaments; the conditions under which labor is performed on the one hundred mines could not all be the same; but each employer of labor in a mine expects that laborer, whatever his vocation may be, to be 100 percent perfect, even though his teachers may have numbered one hundred. If a child, under the great educational system of the United States, traveled from one state to another, and in the ten to fifteen years' time devoted to education was taught by one hundred teachers, one hundred different temperamental creatures, the child would be in some confusion at the end of the ten or fifteen years' tutorage, even though our system of education is based upon fundamental principles that are alike throughout the United States.

Let us enlarge this scope and suppose that the child is educated in various parts of the world, under different national educational laws. The result at the end would be no more satisfactory, if it could be weighed up in accordance with the weighing up process, to which the employe is subjected, each time he is employed at a new job.

Our educational system in the United States is based upon cooperation, with practically the same routine throughout the United States. This being so and the results being fairly satisfactory it should be quite possible to promote industrial cooperation to such a degree that employers of labor would eventually bind themselves into a great organization for promoting better conditions of labor and a better understanding between labor and capital. The better understanding must take the line of greater resistance—that is to promote an under-

standing between labor and capital where labor will understand the necessity for protecting capital, if for no other reason than self-protection. Labor must understand that capital must exist, and capital must increase in order to conduct large enterprises where large sums of money are required for the establishment of great businesses which could not possibly grow into being without first the imagination of capital that a business *could* be promoted by the expenditure of capital in large amounts. There must be far-seeing men behind the scenes in all of these enterprises. There must be money behind the scenes,



W. J. Loring

available for handling by these far-seeing men.

Enterprises are started with capital behind them and there must be capital behind all enterprises, otherwise the enterprise will be doomed to start with. The employment of labor becomes a necessity, because labor is part of the enterprise, but it can be no part of an enterprise that does not exist, and an enterprise cannot exist without the expenditure of money. Therefore one cannot benefit without the other and one cannot exist without the other. The enterprise that is financed by large sums of money must necessarily be permitted to make a profit, and make a handsome profit, because when the initial expenditure of money is taken into consideration oftentimes it takes tens of years to get back the original capital, although it may be considered a very prosperous business undertaking.

Labor does not take any part in the risk, so far as the initial expenditure is

concerned, or any other expenditure for that matter. Labor does not need to lie awake at night and wonder how the pay roll is going to be met tomorrow. Labor has its troubles, but labor can take up its tools and go to the next enterprise with less discomfort than capital can face a failure, although the enterprise may have been handled in the most economical, far-seeing way. Therefore I say that capital must be encouraged in every possible way to put up its money in the establishment of new enterprises where labor is sure to be required, and where labor will be benefited by the expenditure of capital upon these enterprises.

Confidence in the employer should be cultivated by the employer. A promise should never be made that is not fulfilled. No matter what the promise may be, it should be fulfilled, or a mighty good reason frankly given as to why not.

Industrial cooperation is a big question. It is made larger because there are so many different conditions under which labor is employed, and there are so many different employers representing these different conditions. But that is no excuse for not coming to an understanding along fair and reasonable lines one with the other.

There are many angles to this great problem of industrial cooperation, but there is just as much necessity for cooperation between the employers of labor as there is between employer and employe. Here is the stumbling block, and until a common understanding is arrived at between employers as to what constitutes industrial cooperation, along satisfactory lines, not as much good will be done as would eventually be accomplished if there were an understanding between employers. Much can be done by captains of industries frankly stating their views, without disagreeing one with the other, or taking up any time explaining where the other fellow is wrong.

Industrial cooperation should, therefore, begin at home, and if cooperation is to be the watchword then let us refrain from getting into disputes amongst ourselves, because some one of our members has expounded a theory that we do not agree with. Let everybody speak frankly and freely, without fear of criticism, and in this way the best will be brought out. Argument, no matter whether it be between employers or between employer and employe, never brings forth anything but irritation. Every endeavor should be made to avoid this state of affairs. Let those who are handling large enterprises deal with their labor as they would deal with their own household. We will fail in some directions because no employe or no employer is 100 percent perfect and nobody should expect him to be. We can

certainly increase the percentage of perfection by being human in our actions towards others, and by trying conscientiously to understand the difficulties of the other fellow.

One of the best means for the promotion of more harmonious relationship between employe and employer is regular meetings of employes with those officials who come in contact with labor. These meetings should be religiously attended by every official of the mine or in the factory, as the case may be. Every official should be made to speak and to discuss pertinent problems of the company; there should be a secretary to take verbatim notes, and these notes should be carefully considered by the board of directors, the president or whoever may be appointed as practical head of the undertaking. By this means the head of the undertaking reaches the laborer, whatever position he may occupy, through those who come in personal contact with him. It is a big job, but it is worth it. It is certainly worth while to come in contact with those with whom it is desired to promote a better feeling, and those to whom captains of industries must look for the development of labor power. The question of labor power is just as important as the question of horse power developed in a steam engine. There is no offense in this definition of labor. After all it is power, and as we are taught to deal with power upon mines and in factories, measured by horse power, whatever man power is developed may be measured the same way. In the handling of tonnages of ore, the tonnage per man shift is carefully recorded and compared with previous records, which is along the same line as measuring horse power. Therefore those of us who are employing large groups of labor must watch the cost of power developed by our labor the same as we watch the cost of our power bill. Without the machinery being carefully cared for, the line shafting kept in line, belting in good condition and a

minimum of friction created in our machinery, our power bill is likely to be larger, or greater per ton or per unit than should be the case and the same applies to our labor. Unless our laborer has a comfortable home and is happy at home and well fed the cost of the power

There is just as much necessity for cooperation between employers of labor as there is between employer and employe. Until employers arrive at a definite understanding as to what constitutes "Industrial Cooperation," little can be accomplished. The first step is an agreement among employers themselves.

developed by him will be higher than it should be. Therefore the power developed by steam and hydro-electricity can be compared with the power developed by labor. One should be cared for just the same as the other.

It is not only the laboring man, or the man who draws the daily pay that should be cared for, but the next in line, or the under-bosses, shift-bosses, foremen and superintendents. Each of these must have the same care, otherwise the power developed by them will cost more than the industry can afford to pay.

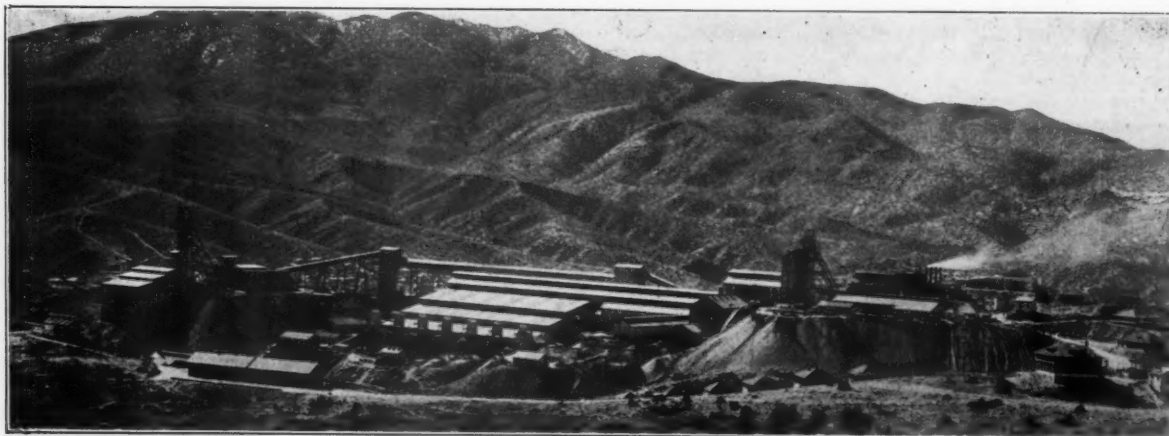
As I said before, the question is a large one. It is so far-reaching that every care should be given to it. Outspoken opinions should be expressed. Let us be outspoken and come to a final and satisfactory understanding before it is too late. Let us educate ourselves. Let us understand ourselves and understand the businesses that we handle for large groups of shareholders. Let us cooperate with each other; when we do that we will create confidence in our employes. We need to be humane in our actions toward our employes. It is not difficult; it does not require much time to pay attention to the laboring man. It is very easy to distinguish the difference between one who is happy and well fed and one

who is unhappy and underfed. It is very easy to distinguish the difference between a man who is well and feeling good and one who is ill and feeling bad. In each case the shift boss, foreman or whoever he may be, will be doing his employer a world of good if he will inquire as to what the trouble is and find out whether anything can be done to alleviate the distress that is apparent. All of this can be done without offense, and it must be done, in order to bring about a good feeling between the employe and employer, and insure satisfactory results for the future in the cost of operating, no matter whether it be mine, factory or any big enterprise. The cost of every operation in the world is higher at the present time than it was in 1914. The cause for this inflation is too well known to repeat, but the war is over and the results obtained since that eventful day on the 4th of August, 1914, should be a lesson to many on both sides of this question, and every advantage should be taken of the opportunity to understand each other and return to pre-war conditions so far as production costs are concerned, as soon as possible. This cannot be done without a thorough understanding between employe and employer, in other words, a complete understanding along the lines of industrial cooperation.

JUSTICE IS THE KEYSTONE

(Continued from page 237)

mistrust allayed, and loyalty to the organization as a unit inspired. Over that conference table, he endeavors, through justice, to open, not a way out, but an avenue of mutual approach, so that the management, the subordinate officials, the foremen and the men come to see one another and the conditions of the organization as they are, and they arrive at a recognition of their mutual rights and mutual obligations.



ORGANIZATION AND COOPERATION IN AMERICAN INDUSTRY

Compulsory Arbitration Applicable In Theory But Not In Practice—Direct Negotiation Between Worker And Employer Solution Of Labor Problems—Real Remedy Lies In Education Both Of Workers And Of Employer

THE alleviation of our industrial problems lies in the development of organization and cooperation in American industry. Labor problems we have had always with us since the first man was driven forth into the world to seek his livelihood, under the injunction of the Almighty, "In the sweat of thy face shalt thou eat bread." From that day to this mankind has lived by labor, and has wrested a hard living from mother earth. The whole history of the human race is a history of labor problems, for mankind has found its ultimate happiness on this earth in the doing of work. There is no greater satisfaction that comes to the human heart than the satisfaction which arises from the sense of a task well done, a duty well performed.

The problems of the worker as we know them are many of them due to modern conditions of industry, but labor has always had its problems. It is related in the Scriptures that when Solomon, King of Israel, determined to build a great temple to God, he sent to Hiram, King of Tyre, for workers, calling for a "man cunning to work in gold and silver and in brass and in iron and in purple and crimson and blue, and that can skill to grave with the cunning men that are with me in Judah and Jerusalem." Solomon contracted with Hiram for a supply of materials, including "cedars out of Lebanon," and it is set forth with great detail exactly what wages and supplies were to be furnished the workers of Tyre by Solomon. This is probably the first labor contract on record, and it is probable that the arrangements of the details entailed what we would call today, a labor dispute.

The great Preacher himself tells of a labor dispute, in His parable of the workers in the vineyard, when those who had agreed to work a full day for a penny murmured against the master of the household because he paid the same wage to those who had labored only from the eleventh hour. Here we have the basic labor difficulty, the dispute over what a man shall be paid for his effort, the dispute over inequality in wages. That basis of labor problems is with us today, and probably will always be with us.

The problems of labor have grown tremendously as specialized industry has developed down through the centuries. When a single family, working on the land, supplied itself not alone with food, but with clothing and with all the other

By JAMES J. DAVIS
Secretary of Labor

(Written especially for the Mining Congress Journal.)

necessaries of life, there was no room for dispute. There was no opportunity for a textile strike in the days when the



Our great industrial need in America is cooperation. Before we can have true cooperation we must have understanding, the understanding of each others needs; when that day comes we will be close to the heart of the Golden Rule in American industry.

textile industry was a home industry, when every farmhouse had its spinning wheel and loom. In those days the worker could strike only against himself. It may be that special skill or special inclination led the individual adept at fashioning clothing to depend upon others to raise his food, and became tailor to his neighbors. The special skill of one individual in weaving probably led him to undertake to absorb the weaving business of his neighbors who abandoned the loom and soon abolished it from the home.

At any rate, the development of this division of labor, this specialization in craft, lost the individual his independence and led him to rely upon others to supply many of his wants. Down through the ages the industrial system

has thus become more and more complex, especially as the development of machinery led to the concentration of single industries into highly integrated organizations. Our interdependence has developed to such a degree that now any interruption of labor on the part of any one group vitally affects society as a whole.

It is readily conceivable that when men began to delegate to others the supplying of certain needs there was an expressed understanding between the parties concerned that each would continue to provide for the others within his particular field of labor. The weaver must have guaranteed to the farmer that he would diligently work the loom which the farmer had abandoned. The miller, harnessing water power and undertaking to grind the grain of the farmer who abandoned his primitive milling implements, must have agreed to keep the mill at work, and the farmer supplied with his finished product. As this division of labor gradually became more highly developed, this agreement to perform continued, and today the implied agreement of each of us to work for the other is just as strong as it was in the days when industrial organization began. Thus every worker, no matter what his craft, and every manager of industry owes a duty to society as a whole. He owes it to society to continue producing his product so long as society continues to produce for him the things which he needs. Unless we recognize this obligation, it is possible to conceive a situation when all workers would cease specialized production and every man would be forced to return to primitive methods to supply his own varied wants.

Industrial peace will never be achieved through laws. There has been much talk in recent years of compulsory arbitration of labor disputes, but the principle does not appear to be workable. The information that comes to me indicates that wherever compulsory arbitration has been tried it has proved a failure. Strikes and lockouts have been with us since the first dim dawn of man, are with us today, and probably will always be with us, so long as mankind is subject to the desires of human nature. So long as employers seek to impose unbearable conditions on their workers, and so long as workers endeavor to obtain more from industry than they are entitled to, just so long will we have labor problems. The remedy lies not in governmental interference, between worker and man-

ager, but in direct negotiation and mutual understanding.

I believe that the real remedy lies in education. Education of the workers in the difficulties and dangers which confront industrial management, and education of the employers in the aims, ambitions and problems of the men who work. I believe we are making progress in this direction. The day of master and man is gone forever from American industry. With the passing of that day I trust that we are leaving behind the period of discord and strike, of misunderstanding and force in American industry, and are approaching an era of good-will—an era in which men and management in industry will be guided by the Golden Rule laid down by the Gospel:

"Therefore, all things whatsoever ye would that men should do to you, do ye even so to them."

I like to think that we are growing nearer this goal every day. I know that "there is a constantly increasing tendency among management and workers to seek a better understanding of each other's problems. They are coming to know that they are not enemies but partners, mutually dependent upon the industry which they serve for a livelihood, and owing a duty to each other, to their industry and to the public which that industry serves. They are realizing that they have mutual interests, and that they can progress only through mutual good-will and mutual understanding." I know this is true through the records of the Conciliation Service of my Department. It is not so long ago that the great bulk of the trade disputes submitted to the service for mediation and conciliation had already reached the stage of open strike, and men and management were both embittered by an appeal to force. Today the bulk of these disputes are submitted before a strike or lockout has become effective, and both men and management seek to adjust them in a spirit of mutual fairness and good-will. No one who has endured the misery and bitterness of a prolonged strike, with its

terrible consequences to women and children, can fail to appreciate the great gain thus made.

Our industrial difficulties, like many of the difficulties in other phases of our national life, grow to a large extent out of the power of minorities. A small minority of men in the labor movement can work great harm in breeding disrespect for labor organizations. A small minority of employers in any given group can do tremendous damage to that group in its relations with labor and with the public. Most men in every walk of life want to do the right things by the other fellow. They are held back, by the almost negligible minority, which seeks to press for its own advantage.

Recently we secured an agreement in the boxboard industry which will eliminate the seven-day week and the eleven and thirteen-hour day in our boxboard

There is a constantly increasing tendency among management and workers to seek a better understanding of each other's problems. They are coming to know that they are not enemies but partners mutually dependent upon the industry which they serve for a livelihood and owing a duty to each other, to their industry, and to the the public which that industry serves. They are realizing that they have mutual interests, and that they can progress only through mutual good will and mutual understanding.

plants. The great majority of the boxboard manufacturers were ready and willing to abolish the long shifts. For about a year all but a very few were ready to come to an agreement. But it was manifestly unfair to put the bulk of the industry on a short shift and to permit a few manufacturers to continue the old long hours and the seven-day week. It was necessary to secure an agreement that would cover the industry as a whole. To do this we called the boxboard manufacturers together in Washington and secured the consent of all of them to a short week, short shift proposal.

I have no doubt that we could settle almost all of our industrial difficulties easily and peaceably if we could follow the will of the majority both among

workers and employers. Our obstacles arise when the irrepressible minority on both sides insists upon conditions which the majority know are impossible. For there are irreconcilables in every labor organization and irreconcilables in every group of employers. It is these irreconcilables who must be suppressed if we are to reach the right solution of our industrial problems.

Our great industrial need in America today is cooperation, and before we can have true cooperation we must have understanding. I look forward to the time when both men and management will know each other's problems, and understand each other's needs. When that day comes we will be close to the era of the Golden Rule in American industry.

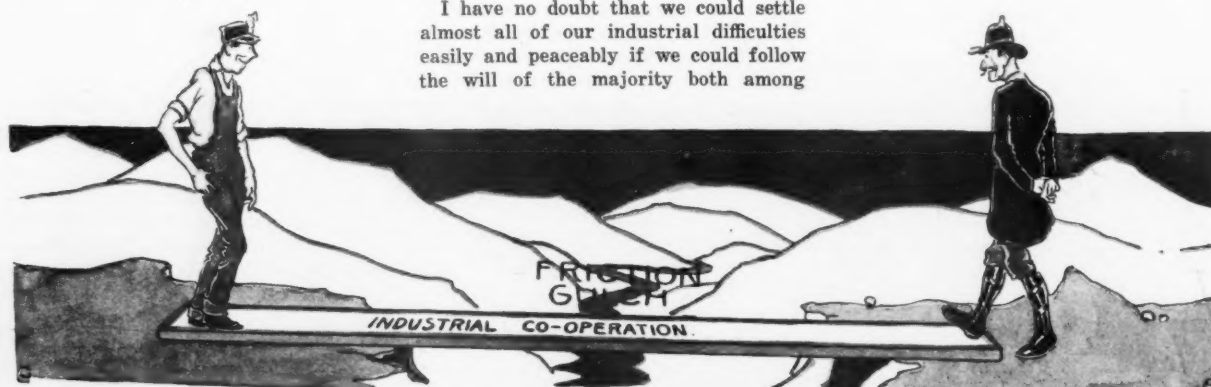
Sixty-five percent of the 219,000,000 acres of forests in private hands are entirely without fire prevention regulations.

Emmet D. Boyle, former governor of the state of Nevada, has recently been appointed general manager of the Mason Valley Mines Company at Mason, Nevada.

The Department of Labor adjusted a strike of 8,000 miners of the Lehigh Valley Coal Company in the Wyoming section of Pennsylvania. It adjusted a strike of 150 employees of the Alaska Chemical Company of Jersey City. The department is attempting to adjust a strike of 2,900 miners of the Hudson Coal Company at Plymouth, Pa.

The Bureau of Mines will loan free on application to its Pittsburgh station a motion picture film on safety in coal mines, presented by Stuyvesant Peabody in memory of F. S. Peabody, the well-known coal operator.

The Bureau of Mines reports that eight universities offer fellowships in cooperation with it on mining problems during the coming year.



ONE WAY TO INDUSTRIAL PEACE

Interesting And Successful Plan Adopted By West Kentucky Coal Company—Friction Eliminated—Of Great Benefit To Employee And Employer—Collective Bargaining—Labor Adjustment Committee—Group Insurance Policy—Special Sick And Death Benefits—No Strike Since Installation Seven Years Ago

PROPAGANDA against coal is frequently based upon ignorance or is as frequently purely malicious. This great basic industry has erred to no greater extent than other industries, yet it stands accused of the entire list of sins, both of commission and omission. The popular publication today is the one that "exposes" the so-called weaknesses of this great industry. Coal has been a target for politicians, for labor leaders, and for disgruntled citizens, and the old theory that "everybody is against something" seems to have found a definite lodging place with the coal mining industry.

The survey of industrial relations problems, which the Industrial Cooperation Division of the American Mining Congress has undertaken in behalf of the entire mining industry, has demonstrated that, in spite of the fact that the problems that have confronted coal have been almost insurmountable, the industry is working continuously and intelligently to find some method that will satisfactorily serve to bring about the most desirable conditions between management and labor. The purpose of the Industrial Cooperation Division is to find out exactly what coal and metal mining companies are doing to meet the situation. That they have not been asleep is a well demonstrated fact.

WEST KENTUCKY COAL COMPANY'S PLAN

One of the most interesting and unique plans that has come before the Industrial Cooperation Division is that employed by the West Kentucky Coal Company at Sturgis, Ky. This property produces 8,000 tons of coal daily, has ten modern mines, and employs 1,850 workmen. The arrangement with their employees is through an organization known as the Employees' Mutual Benefit Association. This is the only organization of its kind in the entire mining industry and it has worked out most satisfactorily both to the management and to the employee.

EMPLOYEES' MUTUAL BENEFIT ASSOCIATION

The Employees' Mutual Benefit Association of the West Kentucky Coal Company was incorporated on February 12, 1912, under the laws of the State of Wisconsin. It was granted its charter September 1, 1918.

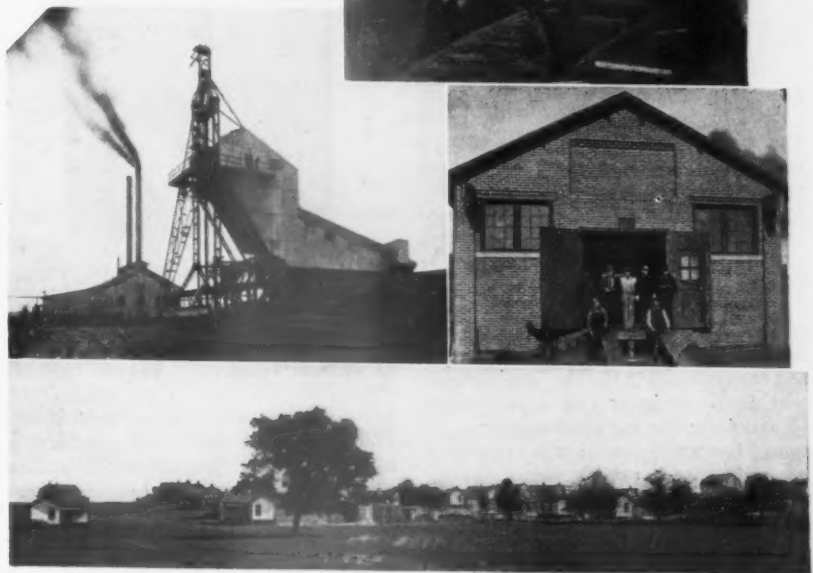
The association is a voluntary one and is for the purpose of insuring against disability either due to sickness or acci-

dent, and to allow the employees to bargain collectively. Any employee of the company is eligible to membership in the association upon the payment of a membership fee of \$1. The first seven signers of the article of incorporation constitute the first council of the association. Four members of the council are chosen by the employee members of the association and three by the president of the company. This organization holds annual meetings for the purpose of electing officers, which meetings are attended by delegates from district organizations. It is necessary that a majority of outstanding certificates of membership represented in person or by

that is paid by each member, for medical services to the association's physicians.

GENERAL LABOR CONTRACT AND AGREEMENT

The general labor contract between the company and the association binds



West Kentucky Coal Co., Sturgis, Ky.

Top—At the bottom of the shaft in one of the older mines. Left—Mine No. 9. Right—Machine shop at Mine No. 2. Bottom—Camp at Mine No. 1

proxy be produced to constitute a quorum before business can be transacted. Special meetings of the members may be held at the principal office of the association as often as the majority of the council may deem it expedient. Every certificate of membership is entitled to one vote, and all elections of members to the council are held by ballot and the highest number of votes cast for any member of the council elects.

The company contributes to the treasury of the association an equal amount

the company to employ only those applicants for positions who indicate their willingness to become members of the association and makes it obligatory upon the company to undertake to secure the application for membership for all persons who may be employed by it. The association assists the company in procuring employees when required.

LABOR ADJUSTMENT COMMITTEE

The four members of the council elected by the employee members consti-

tute a Labor Adjustment Committee and represent all employe members in all negotiations with the company relating to wages, hours of labor and working conditions, and they have the right to negotiate contracts.

The company undertakes, with respect to wages and working conditions, to do the following:

(a) Treat collectively with members of the association through its labor adjustment committee.

(b) Make effective hours of labor mutually agreed upon.

(c) Arrange for election, by members of the association, at each mine or department of a mine or department adjustment committee of three members, whose duties shall be to settle any local matters relating to rates of wages, working conditions, etc., in accordance with terms and conditions of contracts executed by the labor adjustment committee of the labor council, and to bring before the labor adjustment committee from time to time other matters which come within its scope.

In case there is any dispute between the association and the company concerning the interpretation of the agreement respecting hours of employment, working conditions, wages, etc., which cannot be settled satisfactorily to both parties by negotiation, then it is agreed that such dispute shall be referred to a board of arbitration, consisting of three members, one of whom shall be chosen by the association, the second by the company, and the third member to be chosen by such two members. Their decision is binding upon both parties.

In addition to the labor adjustment committee, there is a safety committee, charged with the duty of investigating and recommending to the superintendents of the company and to the council all measures for increased safety; a pit committee, whose duty it is to investigate all controversies arising out of reasonable claims and grievances of a member employed at the mine; a visiting committee, which shall from time to time visit members who are ill or who are otherwise afflicted; an auditing committee to examine the books and accounts of the treasurer of the association and make a report. A district organization is maintained at each mining camp, known as District No. 1, District No. 2, etc.

REQUISITES FOR MEMBERSHIP

The rules concerning membership include continuous service with the company for a period of at least thirty days; ability to satisfactorily pass physical examination; affirm allegiance to the United States Government; a pledge to do all in their power to promote harmony in the mining industry, and to loyally abide by any contract made by

the association through its council and those who have been duly initiated into the lodge of the association. The council may terminate any membership in the association at the termination of any month for cause, provided the member affected has been given due notice of the council's intention so to do and an opportunity to be heard in relation thereto.

Social membership includes relatives or friends of the regular members of the association who have made formal application for membership. These members are permitted to wear the membership button and to take active part in all social and recreational activities of the association. They are not entitled to attend regular meetings of the council, participate in elections, and they have



C. F. Richardson, West Kentucky Coal Co., Sturgis, Ky.

no voice or vote in any matters pertaining to the business of the association. The social members pay a membership fee of 50 cents and social membership dues of 25 cents per month. The dues thus collected are kept in a separate fund and used for social and recreational activities.

MEMBERSHIP BENEFITS

The benefits accruing to each member comprise medical attendance, including members, their wives and dependent children. Each employe pays to the association physician \$1 per month for an employe having a family and where an employe is unmarried the amount is 75 cents per month. The company contributes an equal amount and from this fund the association pays the sick benefits and death benefits. It also pays from this fund the maintenance of the association—salaries of their representatives, their secretary, etc.

OLD AGE PENSIONS

When a regular member of the association has reached the age of sixty and

has been in the employ of the company continuously for fifteen years or more, he is permitted to retire on a pension for life.

Regular members are paid a sick benefit of \$1 per day for the total period of disability, exclusive of the first seven days, unless such period of disability exceeds twenty-one days, in which event payment of \$1 per day shall be made for the entire period of disability, provided that the total disability payment shall not exceed \$100 during any one year of membership. In addition to the sick benefit there is paid a death benefit of \$75.

If he attains the age of seventy and has been in continuous service of the employing company for fifteen years preceding, the company retires him on a pension for life. Any employe who is a regular member of the association who becomes incapacitated for active service from other than occupational illness or injury, who has been in continuous service of the company for fifteen years or more, may be retired from active service with a pension for fourteen years. The amount of pension is determined by taking 1½ percent of the average annual wage for the last ten years of service and multiplying same by the number of years of continuous service of the employe. The minimum pension provided is \$240 per year; the maximum pension provided may not be more than 50 percent of the average annual wage during the last ten years of service. The funds for these pensions are provided by the employing company with the reservation that pension shall not be in excess of the total amount equivalent to the sum per annum of 1 percent per ton of coal mined.

GROUP INSURANCE POLICY

Every employe of this company starts out with a \$500 policy; the company pays half of the premium and the employe the other half. At the end of the first year the policy is increased \$100 and so on for a period of five years; at the end of this period the employe has a \$1,000 policy; the company paying for all additional increases and the employe only paying for the first \$250.

The decisions of the council must in all instances be final and conclusive. There is no distinction made among members by reason of nationality, religion, politics or color, and no discussion or debate on such matters are permitted.

The management of the West Kentucky Coal Company is highly pleased with the results obtained during their seven years of actual working under this agreement. The company has not been involved in any strikes during that time. This is only one instance in many where individual coal companies are working out the problem of management and labor in a manner most satisfactory to both.

INDUSTRIAL COOPERATION AND COMMON SENSE

Leaders In Coal Industry Present Views To Industrial Cooperation Luncheon At Cincinnati Meeting—Cooperation Of The Press Great Factor—Honesty, Loyalty And A Willingness To Divide Fairly Only Real Solution Labor Problem

AN informal luncheon with industrial cooperation as the subject for discussion was held at the Hotel Gibson, Cincinnati, Ohio, on Thursday, May 15th. Herbert Wilson Smith, in charge of the industrial cooperation movement for the American Mining Congress opened the discussion with a general statement as to the purpose of that organization in its effort to bring about a better understanding between labor and capital. Mr. Smith asserted that "industrial cooperation, after all, is just another form of old-fashioned horse sense. In our relation as employer to employe, we have moved a long way from the old personal relationship that used to exist when each business enterprise was but a small industrial unit. Today we have large units with the responsibility divided among workmen, foremen, superintendents, general managers and executives. The mining industry generally and the coal mining industry particularly is under the disadvantage of a feeling on the part of the public that all is not well in its labor relations. That feeling in a large measure is responsible for strikes. A strike has back of it the real or supposed support of the body politic, which is based upon a misunderstanding of the conditions which exist between operator and miner.

"The American Mining Congress in its effort towards industrial cooperation hopes to do three things: It hopes through organization and leadership to be of service; through its leadership to lead toward worthy ends; and through its organization to make the service possible. It is not our scheme to bring to you any one plan and say, 'This is the thing that you need.' Rather we intend to bring together those plans which have been tried and found wanting, or tried and found successful, and give to the mining industry generally the benefit of the efforts of other operators.

"We hope to build up first within the industry itself an honest, sincere, definite incentive toward a better understanding between operators and workers. We hope, second, to build up in the workers themselves the fullest possible feeling of confidence in the motives of the operator, and we hope, third, to make clear to the public mind what is being done by the operators, so that the false, stereotyped idea with regard to labor relations in mining may in a measure be corrected."

Harry N. Taylor, president of the United States Distributing Corporation, New York City, for many years vice-

president and general manager of the Central Coal and Coke Company at Kansas City, a man of varied and practical experience in the industrial situation in the coal industry, stated that in his opinion the major barriers to a proper solution of the labor problem are over-production of coal, over-manning of



F. P. Wright

the industry and lack of public sympathy and understanding of the coal operator's problem. In part, Mr. Taylor said, "I have seen the ups and downs of the coal industry in almost every phase, and the bituminous industry has never before been in such a peculiarly depressed condition as it is at present. With the production in this country of 830,000,000 tons, there is a market for about



Lee Long

500,000,000 tons. During the war everybody seemed to feel, through government urging, that it was necessary to open up more coal mines, and the results of that over-production are being felt intensively by a very peculiar situation with our labor. The miners got their wages up during the war from the contracts which they had entered into with the coal operators by mutual consent and collective bargaining. The coal industry during the war being entirely under government control, through urgent appeals to government politicians, there were three different advances paid under contract between the operators and miners at government request. In other words, contracts made under ordinary commercial conditions were modified three different times upward.

"During the war the contracts went on and they maintained their wage, while other industries liquidated. Since that time, through strikes and other government interference, they still maintain that position, their war-time wage, and now, through political expediency, they have been able to obtain it three years more. The labor question in the bituminous and anthracite industries has been fixed for years to come, still based on a war-time wage which was forced under war-time conditions, and which was three times modified by the miners and operators by mutual consent.

"Now it is an impossible situation to hold yourself up by your boot straps. You cannot hold your labor up without affecting all other industries. Even in metal mining, it affects the cost of metal. It affects the cost of everything we eat and wear, as long as that industry is carried on with our labor cost, which is 85 percent of our total cost. It is almost impossible to get coal down where it ought to be, relative to other costs in the country, and naturally the public is concerned, and feels antagonistic to the coal people, because they do not realize it is impossible to produce such a change because of the high cost of labor. Therefore, they have been forced to find substitutes for coal and have gone to electricity, oil and other substitutes, and in doing that they have cut down the demand for coal so there is an over-supply of miners.

"We have 400,000 surplus miners to produce the coal we need. They all belong to the union. The union wants to find jobs for them, so they have gradually, through their union, created a condition in the coal mine where the job is made

for the man, instead of the man doing what he is told to do. We used to be able to send one man to do a job at a cost of \$7.50 per day. Now we have to send a pump man and a man to set the pipe and an electrician to test the wires connecting the pipe to the water, and we send in a timberman to put a prop to make it safe—so that takes five men to get that job done, at a cost \$30 for eight hours. On the other hand, at the Immigration Committee meeting recently held in Washington, the metal miners testified they were short of men up to 100,000.

"But there is that union dam in the stream of labor. The men that can get \$7.50 as a minimum wage for eight hours will not accept the metal miners' wage of \$5 or a little over. Naturally the men hang around the high priced mine in the hope they will get work at \$7.50. The labor stream is dammed up; we need that union dam knocked down, so that the labor supply will flow back and forth in its natural channel. It would solve the working question, and the question of the coal men.

"There are other things. I want to touch upon things that are not so well known to the public. The labor unions have a great way of maintaining a lobby, not only in the National Capitol, but in all of our state capitols. They have the most strenuous labor lobbies in every law-making body of our country. They put over in the guise of safety measures certain laws which are nothing in the world but union propaganda, sugar-coated by a safety outside. They put the operator in a most embarrassing situation, because it is always embarrassing to combat anything which is supposedly protecting human life.

"In the State of Illinois, which has a large coal area, they have a law which is called the 'Competency Law.' It was passed under the guise of safety, that it was not safe to have a man work in a mine that was not trained to that vocation. The law says that in every coal mining district there should be five of the most competent miners, who are to constitute a board, to give the men a certificate of competency. The county judge issues these certificates, and no man can work in the mine without that certificate. That sounds fine, and sounds as if you were getting the best labor. It does not mean anything but a union court, because in a mining district the county judge is put in power by the miners. He immediately appoints five union miners on that board. They don't care whether the man that applies is competent or not. If he does not have a union card they will not let him work. You could not bring a man who had worked forty years in Kentucky, to Illinois, because the judge will not give him a certificate. They have tied Illinois hand and foot. They passed the same

law in Indiana, and today those two coal producing states are absolutely unable to cope with the law, no matter how unjust or unfair it is. Operators did not dare go and fight this law because public opinion would have been thrown against them; they have absolutely surrendered their right to protest against an injustice, or any demand that is made by the miners.

"Those are things people don't understand. They don't know what effect it has on the cost of coal, but when you get a district tied up and put them in a posi-



Harry N. Taylor

tion where they cannot defend themselves against any injustice, it adds to the cost of coal, which in turn is against public interest.

"People say, 'Why don't you make these facts known to the public?' A story will illustrate 'why.' The miners' side of the story is always in a way exciting, either a strike, or a fight, or something of that kind which has news value, and they can couple with it what they want to say, other than just a little news.



Carl Scholz

"Just before the big strike of 1919 a young man came into the office, a reporter from the Times Register, and said, 'We want the coal operator's statement of their position in this strike.' 'All right,' was the reply, 'we have just written it out,' and it was handed to the reporter. The next morning there was not a word of the statement in the paper. The reporter came in again and asked for news and was told that the news was all in the statement already given him. The reporter said, 'That was not news, that was just fact.' 'I would like to know how you newspaper men differentiate between news and facts,' he was asked. The reporter said, 'Maybe I can tell you. If a dog bit a man, that would be a fact, but let a man go out and bite a dog, there is news for you.'

"There is the story. If we could get something exciting to tell, we could get to the public, but we only state facts, and they are not interested. They do not read it."

Carl Scholz, general manager of the Raleigh-Wyoming Coal Company, and for three years president of the American Mining Congress, urged that the coal industry be given a square deal or at least a fifty-fifty proposition. Mr. Scholz' comparison of the cost of production of coal and the cost of producing other commodities included a Lincoln penny, a stick of chewing gum, a cube of wood two inches square and a cube of coal weighing ten pounds, all purchasable for one cent. Mr. Scholz asserted that "the coal industry gets the short end every time. We have heard so much about statistics; Mr. Taylor mentioned the production, 830,000 tons. I thought I would bring the opposite side. I recently heard an illustration before a meeting in Chicago which referred to a piece of chewing gum. A piece of gum was handed to every man and woman in the room. Probably every man and surely every woman has chewed gum. It is the best advertised commodity in the world today. It bought the Catalina Islands and the big Wrigley Building in Chicago. This little piece of gum is represented by a Lincoln penny. A penny is a small thing and yet it buys a lot of coal. Perhaps none of you ever thought that a Lincoln penny buys a piece of coal 6 1/4 inches square. One penny buys a lump of coal of that size. Just imagine how much effort it required to produce this much coal, to give the world so much of comfort. How many other industries do so much for the present day civilization? I went a little further with the illustration in applying it to coal. I went to the lumberman. I wondered how that man gets along. How much do you get for your lumber? \$110 in the rough. A 2 1/4-inch cube of wood represents one Lincoln penny. I want to bring to your

attention the four equivalents; the Lincoln penny, the piece of gum, the piece of wood and the tremendous lump of coal, all for one cent each.

"We see in the papers how the coal profiteers are robbing the people; but if we didn't produce this coal what would become of the people? I would like to make one request, that the Secretary of the American Mining Congress deposit this exhibit in his museum of antiquities.

Josiah Keeley, general manager of the Cabin Creek Coal Company, whose experience with the strike in the West Virginia field and the march on Logan, presented his viewpoint in industrial relations work in a most forceful manner. (Mr. Keeley's paper will appear in the July issue of THE MINING CONGRESS JOURNAL.)

F. P. Wright, general manager of the Crescent Coal Company at Bevier, Ky., an operator from a union field, pointed out that their industrial relations plan had always been conducted on a union policy; that in spite of the fact that there had never been any friction between the management and the workers, when the wage scale signed at Jacksonville prohibited their operations, the men did not see their way clear to help any, so that the property is now closed down. Mr. Wright said, "I have listened to all these gentlemen. Think of the effort, the danger, physical and commercial in men going into the coal mining business, both the operator and the miner, to produce that one cent's worth of coal. That piece of gum—I saw that beautiful estate of Catalina Island. I never knew of any coal operator owning a Catalina Island. Most of them live at the mines. No island home that. I am one of the kind that lives right on the job, and I have done it for 25 years. I don't live in New York, Philadelphia or Cincinnati, sit up in a ten-story building and touch a button and a beautiful stenographer comes in to take what I have to say, or send a telegram to the mines and say, 'Fire Bill Jones and put Tom Smith in his place.' I knew them all years ago; perhaps they were boys and grew up there.

"Cooperation is a wonderful thing, and it is the thing. I always try to put myself in the other fellow's place. I don't sit in behind closed doors. The doors are open, any little negro breaker boy comes up to me, and if he has anything to say, I listen to him. If the mine committee comes, I listen to them. We sit down around the table and discuss matters. Sometimes I don't gain my point, and if I think they are right I agree to what they want. If I think they are wrong, I discuss it with them, and tell my reason. We are bound by a contract, and all that sort of thing, but I have the faculty, I think, of putting myself in the other fellow's place. You have to do it. If you don't you have

trouble. It is give and take. It is fifty-fifty. I try to impress upon our men the fact that we are partners, that they cannot get out that cent's worth of coal unless they have electric power down there, tracks, cars, mules, locomotives, motors, shaft, pump, hoisting engines, men on top, blacksmiths, carpenters, plumbers, electricians, a train dispatcher and all of the thousand and one things that go to produce that one cent's worth of coal.

"The men that do the digging of that coal, and the men that help them are just as much partners in the producing of that coal as the people I represent that furnish the money that put up all

Any plan adopted must aim not at the bargaining spirit, but at the cooperative spirit, not at enlightened self-interest, but at enlightened mutual interest. Any plan ought to be satisfactory which inculcates and develops a genuine desire on the part of all concerned to work out fair play and square dealing. An avenue of mutual approach, not a way out, should be opened so that the management, subordinate officials, foremen and the men come to see one another and conditions of the organization as they are, and arrive at a recognition of their mutual rights and mutual obligations.

the equipment; we are partners. What is good for them is good for us, and when we don't succeed and don't have money enough at the end of the year to show a profit, we are in a bad way and it is just as much their look-out that we should succeed as it is ours. The consequence is at this time, after this wonderful Jacksonville agreement which was signed in Florida, under the influences of the ocean breezes, Palm Beach hotels, etc., we had to tell our men, 'Boys, we cannot stand it.' We just said, 'Boys we cannot pay \$2 for something we can only sell for \$1.15 or \$1.20, that is all there is to it.' We just shut down and hope for better times. The men could not see their way clear to help us any, so there we are, watchful waiting, for some miracle to happen that will allow us to work and sell our coal at a profit.

"It is a great big problem, and all could be so easily settled if we were all honest with one another, and loyal to one another, and willing to divide fairly. The trouble lies in human nature. Most of us are selfish, and we cannot get together and help one another.

"The operators have an object lesson right in front of them all the time, showing what cooperation and loyalty means, in the United Mine Workers of America. Those men stand together, suffer together, go hungry, their families suffer, for a principle. But the sale of

a thirty-ton car of coal will bust up any agreement that was ever made.

"It is the lack of confidence and loyalty to one another which brings on most of our troubles; not the United Mine Workers or the Operators Association, but just lack of confidence and loyalty and honesty and honor."

Lee Long, general manager of the Clinchfield Coal Corporation properties at Dante, Va., stated that they had never had any labor troubles in their district, nor had they any affiliation with a labor union. Their problems are settled across the table by discussion. In part, Mr. Long said, "Our situation in Virginia is quite similar to the conditions described by Mr. Wright, of Kentucky, except that we have never had anything to do with the union. We have never had any interruption due to labor troubles. I also live on the job, and while we have quite a large organization, with a capacity to produce something like three million tons per year, it has been my policy from the very beginning of my employment by the Clinchfield Coal Corporation, to know as many of our employees as possible, and to keep in close contact with them as possible, to know about their problems, and to give proper consideration to their viewpoint and to their requests for anything that might come up. I find that there is not anything that will take the place of that kind of personal contact. My firm belief is that the men, on account of being without unionism, and without interruptions incident thereto, are a great deal better off than those men who have had to work under union conditions.

"Our situation, the situation that I describe as being applicable to our case, so far as I have been able to observe, applies generally to the situation in Virginia. None of our producers have had any serious interruption due to labor difficulties, and today, notwithstanding the fact that we are all unhappy over the necessity of having to reduce wages, effective the first of April, we do not hear any criticism of the action of the producer in reducing wages, because they realize that that was a necessity, and followed the same action that had been taken by a great many other producers who compete in the same fields with our coal. The attitude of mind of our employees toward this condition is one of the greatest surprises that I have had during all of my experience as a coal mine operator, which has covered the past 25 years.

James Lattimer Bruce, formerly general manager of the Butte and Superior Mining Company and Davis-Daly Copper Company, has announced that he will begin practice as a consulting mining engineer with offices at 609 Newhouse Bldg., Salt Lake City, Utah.

ANNUAL MEETING NATIONAL COAL ASSOCIATION

Largest Gathering Coal Operators Ever Assembled—S. Pemberton Hutchinson Elected President—Strong Resolutions Adopted—Many Valuable Addresses Made—Splendid Spirit Cooperation Manifest

A PROGRAM bristling with interesting speakers on topics of lively interest to the coal industry marked the annual convention of the National Coal Association. It was estimated that more than three thousand bituminous operators, executives and officials attended. Interspersed with the business sessions were interesting programs of recreation provided by the Cincinnati committee. These included a social diversion to Cincy's Coney Island where an old fashioned Kentucky barbecue was enjoyed. This entertainment was provided by the Cincinnati Coal Exchange. A conspicuous group attending this convention was the delegation from West Virginia, who contributed the largest representation from any coal field, and who invited the association to hold its 1926 meeting at Huntington. Walter H. Cunningham, Secretary of the West Virginia Coal Operators' Association, one of the leading coal operators of the county, and active in the councils of the American Mining Congress, headed the West Virginia contingent.

The Association elected the following officials:

President—S. Pemberton Hutchinson, President, Westmoreland Coal Co., Philadelphia.

Vice-Presidents—Ira Clemens, President, Clemens Coal Co., Pittsburg, Kans.; Michael Gallagher, Gen. Mgr., M. A. Hanna Co., Cleveland; George B. Harrington, President, Chicago, Wilmington & Franklin Coal Co., Chicago; Walter Barnum, Treasurer, Pacific Coast Co., New York.

Treasurer—C. E. Bockus, President, Clinchfield Coal Corp., New York.

Executive Secretary—Harry L. Gandy, headquarters, Washington, D. C.

Former Congressman Harry L. Gandy, the Secretary of the Association in his report denounced the spirit of class hatred which had been manifested by some against the coal industry. "An unsuccessful effort has been made to bring about ill feeling in the public mind toward the coal operator," said Mr. Gandy. "The line of demarcation between employer and employe is so vague in this country as not to permit of class hatred. No better illustration can be given than in this industry, where day after day miners pass on to become operators. In this meeting are many operators who began their coal-producing experience in overalls with a lamp on their cap and a dinner-pail in their

hands. The bituminous operators ask no favors and make no apologies."

Mr. Gandy favored research in the interest of improved methods of combustion appliances to meet the smoke evil and to promote the economical use of fuel.

COAL RESOURCES

Mr. Gandy discussed coal resources, stating that the country's supply will last more than a thousand years. He quoted engineers to the effect that less than one percent of the resources had been mined, which if true would indicate that the supply would last more than four thousand years. Another statement by Mr. Gandy was to the effect that operators have for many years sold bituminous at the mines for less than coal is sold in other countries of the world. While admitting that there are perhaps too many mines and too many miners he denied that this is any indication of inefficiency in the industry, and pointed out that all industries are planned to meet peak demands. Referring to the fact that keen competition exists in coal production he pointed out that the Coal Commission had reported the absence of any combination of operators to influence prices or curtail production.

UNDUE PROFITS DENIED

John C. Brydon of Baltimore, retiring president, denied that bituminous operators are making undue or excessive profits.

"The bituminous coal operators of this country have had their backs against the wall long enough," Mr. Brydon said. "From now on we are going to leave no step unturned to reach the people and give them the real facts concerning our industry."

"We are firmly convinced that the heart of the American public is sound. Inasmuch as the interests of the public and our own are identical, there is no reason why the most cordial relations should not exist. The real goal, which is the greatest good for the greatest number, can be reached only when false prophets have been unmasked and when the public has a correct understanding of the motives and problems of the soft coal operator."

To the extent which this convention impresses itself upon the nation as a gathering of earnest citizens, endeavoring to advance the general interests of the public through a constructive program, will the meeting have been worth

while. And if I gauge rightly the temper and purpose of the coal men who are gathering here, numbers of whom came up through the ranks from the mines, the true message of this meeting to the American public will be a challenge to fair play and a declaration of the rights of a great industry.

"Opinion has been widespread that bituminous coal operators have made undue profits. Perhaps, having this in mind, the Coal Commission last year called on the Bureau of Internal Revenue for a statement as to the profits of the bituminous coal industry for the years 1917 to 1921 inclusive, which years included the war and the year of peak business in 1920, and were the most prosperous five years the industry ever had. The Internal Revenue statement shows 1,234 coal companies from which reports for the five years were available, these including all the larger companies. For those companies showing a net profit for the five years an average of 11.97 percent is shown on the invested capital. Deducting from the net profit the losses of these companies showing a deficit, the average percentage of income on invested capital becomes 9.54 percent. The reports of the Bureau of Internal Revenue further show that all classifications of industry, such as leather, textiles, lumber, banking and currency and including insurance and investment companies, have higher average returns than this industry."

CAR RULES

C. H. Jenkins, chairman of the transportation committee of the Association, submitted a report in which was discussed assigned cars, fuel oil, mine rating rules, and car pooling. In connection with the mine rating case, Mr. Jenkins said the Interstate Commerce Commission is considering a proposed code of rules for rating mines which is based on a mine's commercial and physical capacity. This code is an outgrowth of a suggestion of the coal commission to the effect that a mine's ability to sell coal should be the principal factor in rating the mine and distributing cars to it. The committee opposed the proposed rule and also a general pooling of cars. The committee stated the coal industry can be best served by a further and more thorough test of the mine rating rules now in effect.

The Association adopted the report of the committee on the ground that the proposed rating of mines on a commer-

cial basis would in effect amount to interference by the government with the industry.

NEW COAL PRODUCTS

Expansion of the coal industry by increasing the uses for coal were recommended by George H. Cushing, of Washington, D. C., an authority on coal. He suggested that the industry produce tar for use in road building, and promote the use of coal in developing electrical power.

The voice of the retailer was heard when Samuel B. Crowell, of Philadelphia, president of the National Retail Coal Merchants' Association, addressed the convention. He asserted that the mining of coal should be continued notwithstanding strikes. Out of an experience of forty years Mr. Crowell, who is one of the leading figures in the industry, advanced the idea that even while a strike was on coal should be continued to be mined in order that the public might not suffer because of disagreement between operators and miners. He urged a better understanding between operators, retailers and consumers, and suggested the organization of a coal institute which would collect statistics on the industry for presentation to the public and the government. He referred to the cooperation of anthracite producers and retailers in providing fuel economy expositions. Mr. Crowell said too many sizes of coal are produced, and advocated elimination of some of them.

THE PRESS AND COAL

Coming from a layman and a representative of the press, the speech of Melville E. Stone, of the Associated Press, appealed to the operators as a fair viewpoint to be taken by the public of the coal question. Mr. Stone recommended cooperation by coal operators, miners and consumers in solving the coal situation. He urged the railroads not to defer the purchase of coal until winter, but that they, with all other consumers, must "join hands to keep the mines going at as nearly as possible full time the year round." Mr. Stone feared that if cooperation was not had "the strong arm of the government, much as we disapprove of its use, inevitably will be used."

After telling the coal men of the functions of his news-gathering organization, Mr. Stone referred to its relation to the coal industry. "There is a curious analogy between the Associated Press and the coal association," he said. "Both have and do enjoy special privileges at the hands of the people. There is something very interesting to a news-

man about the bituminous coal industry. It seems to be the one occupation which successfully defies the recognized economic laws. I am told that the greater the output the greater the discontent of employed miners and consumers.

"You have some hard problems before you. The questions of a living, fair wage; and of a fair price for the consumer. You can not solve these problems alone. There must be cooperation from a number of sources."

As an illustration of cooperation, Mr. Stone referred to the fact that he recently attended a dinner in New York some weeks ago at which were present

that night, but the door to a sensible adjustment and consequent tranquillity was opened. There was no recrimination. There was a sincere desire to preserve the peace and to do even-handed justice to all parties in interest."

GOVERNMENT OWNERSHIP OPPOSED

Opposing government ownership of coal mines, Mr. Stone said:

"I am opposed to governmental ownership or control. But mine owners must recognize that they are charged with a trusteeship which they cannot evade. The very so-called ownership of a mine is a misnomer. And the employee must remember that as an elemental principle of economics we must strive to get back to 'normalcy.' And the railroads, which are the largest coal consumers, must recognize their trusteeship. They, too, having been given special privileges, have special corresponding obligations. Their method of holding off on their purchases until the approach of winter and then using their cars for the accumulation of a supply for themselves, leaving a shortage of cars for the needs of the public, must be modified. And factory corporations, and individuals, as far as possible, must cease seasonal buying. We must all join hands to keep the mines going at as nearly as possible full time the year round. This is the kind of cooperation we require. And if we do not get it, the strong arm of the government, much as we disapprove of its use, will inevitably be used. And such use, in such an emergency, will be no departure from the basic theory of our self-government. It will not be Socialism, nor Bolshevism, but a simple recognition of the legitimate needs of a self-governing people and a compliance with the doctrine, equally scriptural and equitable, that 'to whomsoever much is given, of him shall be much required.'"

John Mahin, advertising and merchandising expert of New York, said that when coal operators find what ultimately becomes of their product and how much it costs the consumer, they will realize how little the price they receive affects its ultimate consumption.

"The consumer is the final answer to all business questions," said Mr. Mahin.

"Modern merchandising views all business from the standpoint of the final consumer, who is the real customer. When operators sell a car of coal to a railroad, or a baby carriage manufacturer, you may think your customer is the concern whose check you receive. You are wrong. Your real customer is the person who uses up the energy stored



S. Pemberton Hutchinson, newly elected President of the National Coal Association.

the president of the miners' union, a prominent coal operator, and Secretary of Commerce Hoover. The dinner was at the time the union contract extension was pending, and those present exhibited a spirit of cooperation. On this point, Mr. Stone said:

"The right of men who dig coal to a living wage was firmly presented by Mr. Lewis, and the right of the consuming public by Secretary Hoover. All the time there was a desire for an accord if such a thing were possible. For a failure to agree, a strike, a coal famine—idleness for the miner and exorbitant prices for the householder—meant no good, but indeed great hardship for everyone. The business was not settled

in your coal by riding on the railroad, or the baby who wears out the baby carriage made by the manufacturer who used your coal to operate his factory.

"No passengers on the railroad and no babies to ride in carriages means no revenue for the railroad or baby carriage manufacturer. Without revenue they cannot continue to function. They stop buying coal. You must find a new outlet or stop operating. How many of you are seriously considering ways and means to increase the annual crop of babies to stabilize your operating output?"

"What forces make the price you get on your coal? How many of you realize that your market is something you can control? How many of you realize that your market is nothing more or less than the state of mind of a group of people?"

"Price changes are not changes in intrinsic values. The energy quality of various grades of coal does not change with prices. The only change, then, is the opinion of people as to what your coal is worth."

Nine resolutions were presented and adopted. These included special vote of thanks to Mr. Brydon, retiring president, to the operators' special committee, to the city of Cincinnati, and to the gentlemen who addressed the meeting. The resolutions adopted in regard to government interference and national taxation are as follows:

Government Interference

WHEREAS, At the last meeting of this Association it was unanimously resolved that it is the sense of the members of this Association that any interference with the law of supply and demand is detrimental to the prosperity and welfare of this nation; therefore, be it

Resolved, That we do here and now again instruct our Board of Directors and our officers to oppose by all legitimate means the imposing by legislation of any additional regulations upon commerce or industry and especially such legislation as singles out any one industry for regulation by special commission, bureau or agency.

Taxation

Resolved, That it is the firm belief of the members of this Association that there is no more vital question affecting the industrial and commercial welfare of this country than that of taxes. There should be immediately adopted by Congress the Mellon plan providing for a reduction in the federal income and surtaxes that will give real and substantial relief during the current year. The curtailing of expenditures by the nation, states and local governments, the adoption of rigid economy and businesslike retrenchment will permit of a material lightening of the burden of general taxation and encourage capital to find profit-

able employment in industry that will give more opportunities for the wage earner and investor; be it further

Resolved, That this Association is opposed to the proposed publicity of tax returns as unfair and entirely unnecessary and is opposed to the proposed surtax on undistributed corporation profits as an unsound and unwarrantable penalty on the proper and conservative financial management of industry.

Soldier Bonus

In addition to the above resolutions, Mr. Bockus, as an individual, presented a resolution endorsing the action of the President of the United States in vetoing the Soldier Bonus Bill and which, on motion of C. C. Dickinson, president of the Dry Branch Coal Company, Charleston, W. Va., was amended to include the Bursum Pension Bill. The resolution as thus amended was carried unanimously. Upon further motion of Mr. T. W. Guthrie, president of the Hillman Coal & Coke Company, of Pittsburgh, Pa., the executive secretary of the National Coal Association was instructed to send a telegram to President Coolidge conveying the action of the meeting on the resolution.

Accordingly, the following telegram was sent to President Coolidge:

THE PRESIDENT,
The White House,
Washington, D. C.:

By unanimous action of the membership of the National Coal Association assembled in annual meeting here today your action in vetoing the Soldiers' Bonus Bill and the Bursum Pension Bill was approved and heartily commended, and I was directed to so advise you.

HARRY L. GANDY,
Executive Secretary.

WEST VIRGINIA MINE OPERATORS' ASSOCIATION

WEST VIRGINIA coal operators took advantage of the presence of so many of their members at the convention of the National Coal Association and the National Exposition of Coal Mining Equipment, the American Mining Congress to hold their annual meeting. They elected J. G. Bradley, president, Elk River Coal and Lumber Co., of Dundon, W. Va., as president and the following other officers:

Vice-presidents, Everett Drennan of Elkins and G. H. Caperton of Charleston; treasurer, Charles C. Dickinson of Charleston; secretary, Walter H. Cunningham of Huntington; assistant secretary, James E. Hart of Huntington.

Executive board, F. O. Harris, W. M. Puckett and Duncan C. Kennedy of Charleston, for Kanawha Field; J. D. Francis of Huntington and J. A. Kelly of Omar, for Logan Field; M. L. Garvey

of Winona and Jacob Phillips of Mason City, for Mason County; G. H. Caperton of Charleston, for New River Field; L. E. Armentraut of Borderland, for Williamson Field; J. J. Lincoln of Elkhorn, for Pocahontas; L. Epperly of Bluefields and C. C. Morfit of Welch, for Tug River Field; J. C. McKinley of Wheeling, for West Virginia Panhandle; A. J. King of Huntington and A. W. Lang of Charleston, for Winding Gulf Field, and J. G. Bradley of Dundon, for the individual operators.

UTAH COAL REGULATIONS

THE Industrial Accident Commission of Utah has adopted a new set of coal mine regulations.

1. Only permissible explosives shall be used in blasting coal.

2. Shot-firing shall be done by electricity, and when all the men are out of the mine.

3. Only approved electric lamps shall be taken into the coal mines, except that approved magnetically locked flame safety lamps may be used in testing for gas. All lamps shall bear approval plates of the U. S. Bureau of Mines.

4. All coal mines shall be thoroughly rock dusted with enough inert material mixed with the coal dust to make it inert. Rock dust barriers shall be installed at every opening to a working level or panel.

5. Coal cutting machines, or mechanical loading machines shall be equipped with water sprays applied in such a manner as to wet down the fine coal dust. Every working place shall be kept thoroughly sprinkled. Men employed for sprinkling shall not be used on any other work, and shall be held responsible for wetting down all coal dust. They are required to make daily reports.

6. Accumulations of gas shall be removed before the men are permitted to enter the mine.

7. Abandoned places, such as rooms, air courses, etc., shall be thoroughly cleaned of all coal, coal dust and rubbish, and the place shall be rock dusted before the track is pulled.

The Board of Governors of the Western Division of the American Mining Congress will hold its annual meeting at Grass Valley, Calif., on June 9 and 10. Formal notices have been sent out by W. B. Goehring, secretary of the Arizona Chapter of the American Mining Congress at Phoenix, Ariz. The program arranged is not an extensive one but will be especially interesting to western members. At this meeting the board will crystallize the views of the western members of the division for presentation to the 27th Annual Convention of the American Mining Congress to be held at Sacramento the week of September 29.





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The Bridle Path—Potomac Speedway Drive

*"When Spring Unlocks The Flowers
To Paint The Laughing Soil."*

TAX PROBLEMS IN RELATION TO RESERVES AND DEPLETION OF NATURAL RESOURCES

*Permanent Organization Needed To Study Taxation Problems Of Basic Industries—
Mines Have Been Subjected To Unfair Methods Of Taxation By Legislative Bodies*

WITH the stupendous war debts and the tremendous increase of government expense, the cost of taxation has become one of the major items of business life, in fact, of all our lives. It is an item that we must consider and deal with intelligently, scientifically and broadly, both from the standpoint of the Government and the standpoint of the industries and taxpayer of this country, if this country is to go ahead and prosper.

History teaches us that one of the most potent causes of the ruin of nations is unsound taxation and unwise and extravagant expenditures. If this government is to extend its usefulness and persist, we, the people of the United States, must meet this great problem of taxation in a wise and intelligent manner and solve it, or we shall go down as other nations who have failed to meet it in the past.

My first thought is this, that the industries of this country, particularly the natural resource industries, must treat this subject of taxation in an orderly way and in a permanent way, in the way they treat the mounting costs of business, in a way they treat their other urgent problems of business. By that I mean that they must form some sort of a permanent organization of paid employees, who will continually study this problem, find the underlying principles and squarely present the issue to the legislatures and thereby secure a wise system of taxation. When I learned that six copper companies pay over 50 percent of every dollar that is spent in the State of Arizona by the state, local or municipal bodies, I realized what a problem in costs taxation was becoming to the natural resources industries of this country.

We start then with a scientific study and classification of industries from the standpoint of taxation. More particularly is this true of natural resources. This brings me to a second thought; that the natural resources of this country, by reason of certain peculiar characteristics inherent in those industries, are bound together by common interests and common dangers in taxation, which compel this organization.

By natural resources I do not mean all the bounties that nature has given to this country, but certain industries

By PAUL ARMITAGE
New York City*

which are getting from the soil and elsewhere certain basic material for the purpose of a profit. Those are primarily the mines, the oil and gas wells, and the timber. I might add waterpower, but this has certain peculiar problems of its own and, therefore I will deal only with

It is an easy thing to tax a mine. Mines are not fugitive. They can not run away. They have not the mobility of personal property or capital. They possess not the flexibility of many businesses. They are serfs fettered to the land. They are in the earth and of it. Therefore they are the natural objects of taxation and the rapacity of local legislatures.

the common problems of the mines, oil and gas and timber.

The first outstanding characteristic of these industries is that they are basic, that is they underly our entire industrial life. Without the mines, without the oil, industry ceases. We cannot imagine what would happen if the mines ceased to mine, if coal was cut off, if the oil ceased. That is a most important fact to bring to the attention of the legislators. They do not realize that they are levying a tax upon the heart of industry, upon something which will affect every man, woman and child of this country. A tax, in its last analysis, is nothing more than an added cost. It must in the end be added to the cost, and eventually passed on by the industry, either in the form of higher prices or curtailed production, with a resultant loss to the community.

The second outstanding characteristic of these natural resources is their exhausting or wasting character. They are self consuming. They eat up their sources of supply. To exist they must continually find new sources of supply. That has a very important bearing upon the subject of taxation. As an example of that I may briefly refer to the theory and development of what is called depletion as applied to Federal taxation. Depletion is a capital deduction before arriving at taxable income.

Now that seems self-evident to all of us. Yet it is only a few years ago that not only was that deduction denied, but

decided adversely by our courts. The Supreme Court decided that depletion was not a proper deduction in determining taxable income in a mining venture. Imagine a court deciding that all profits from a mine are true net profits! That decision was based upon an entire misunderstanding of the nature of the wasting industries, a lack of education upon that subject. I feel that if the question came up anew before the Supreme Court it would reverse itself. But unless the industries themselves advocate those principles and expound them before the bodies dealing with these questions, how are they to obtain intelligent treatment? This is what the mining industry did. It immediately petitioned Congress and, by a series of legislative acts, gradually had the principle of depletion incorporated into the law, until it is now well embedded in our income tax laws as applied to wasting industries.

That is but an illustration of the need and efficacy of organized effort to bring home to the legislatures, to the courts and to the administrators of tax laws the basic or underlying principles involved in these industries and their relation to taxation.

A third characteristic of these wasting industries is the necessity of perpetual renewal or replacement of their existing resources to the end that they may persist. That is a principle which has received but scant recognition. Unless these natural resources and wasting industries of this country can renew their oil wells and can discover new sources of supply, they must perish. A corollary of that principle is that there must be allowed in computing taxable profits a fund for the replacement of these existing supplies, and when discoveries are made they must be treated as replacements and not penalized in taxation.

The attitude of the Federal Government up to 1918 was to consider discoveries as excess profits that the mines and oil wells have made, in other words an unearned find. In the law of 1918 that policy was reversed, and an allowance from profits was made in a begrudging way for the discovery of mines or oil wells, upon the value of the ore or oil deposit. Unfortunately, for the mines the wording of that act was peculiar, and the Treasury Department

*Address before Natural Resource Group Meeting, annual meeting of the Chamber of Commerce of the United States, Cleveland, May 7.

—following its well known policy of constraining everything against the taxpayer—seized upon that limited wording and in great measure defeated the purpose of Congress. The wording of that act was "in the case of mines, oil and gas wells, etc.," discovered by the taxpayer, he should get a value for depletion purposes, but the Treasury Department said a mine is a mine, and you must discover a new mine before you can get the benefit of this provision. You may have discovered a new ore body in an old mine, but that is not a discovery, only a new mine in virgin territory is a discovery according to the department. That ruling practically nullifies, so far as metal mines are concerned, the effect of this provision of the Revenue Act.

It was the intention of Congress to give the benefit of that provision to new ore deposits, whether discovered in existing mines or in unproved territory. I hope that in this new bill which is going to be enacted there will be a provision which will cure that situation, without the necessity of litigation on the subject. Only organized effort can accomplish that result.

A faulty characteristic of these industries is the necessity of maintaining large reserves. They must develop large reserves before they can enter upon the exploitation of them, because (1) production on a large scale is an essential in modern business; (2) knowledge of the extent of reserves is a condition to the determination of plant requirements.

Yet the bodies politic have seized upon these large reserves for taxation. The states tax these reserves as if they were present existing values. These reserves are not present existing values. They are remote contingencies. They cannot, by reason of their nature and physical location embedded in the soil, be produced and sold for many years. It should be recognized that reserves remote in point of time are of little value.

In a table prepared by the Wisconsin Geological Survey, the pyramiding effect of taxation upon an ore body is strong. It establishes that at 3 percent taxes a year the ore reserves not mineable for 30 years are valueless. Yet year after year taxes levied under the ad valorem system upon ore reserves, practically destroyed their value. That should be studied and brought to the attention of the legislators, so that in some way they will understand it, otherwise the mining industry cannot develop the ore reserves required for its continued existence.

I have thus far outlined some of the common characteristics and resulting tax problems, that justify the natural resource industries in creating and making a joint organization to study and solve its unique tax problems and the

correlative problem of government expenditures.

Let us approach the subject from another side, that is the common dangers that confront these natural resource industries. There is the danger of super-taxation of mines. Legislative policy on the subject of taxation passes through three stages in its evolution. The first stage is distinctly friendly toward mines, a policy of subsidization and special exemption prevails. Second, there gradually emerges the stage of what may be termed equalization or fair taxation of the mines as compared with other industries paying taxes. That is a vague definition, I admit, because it is open to debate what particular tax measures are "just or fair." But it is the mental

The urge for extension of government activities and the centralization of state and federal activities, is but an expression in concrete form of the ever-growing conviction of the socialistic, communistic, bolshevistic elements that there is no need of a revolution here and no need to abolish our Constitution or form of government. But, through the instrument of class taxation with a concomitant enlargement of government control and activity, private capital and individual wealth can be destroyed or distributed. Not revolution but super-taxation is their modern legal weapon.

attitude of the legislatures towards the mines that I am emphasizing, not the development of that feeling into concrete laws. It is that attitude of fairness and sympathy which characterizes this stage in the evolution of the legislative policy. Third, that stage is followed by one of when the legislatures adopt the policy of penalizing the mines by super taxes. It is the period of severance taxes, of production excises, of excess or super taxes. Most of the natural resource industries felt a few years ago that this stage was so remote that it was not a real danger. It is a fact today. A few samples of this may bring this home to you. The most flagrant case, of course, is Minnesota. After various unsuccessful efforts to impose super taxes on its great resources an amendment was made to the state constitution permitting the valuation of mines for taxation at 50 percent more than farms and 33 percent more than that of other property. Not satisfied with that, in 1921 the legislature levied upon the mines a so-called "occupation" tax—that is, a tax upon the privilege of mining. This tax is 6 percent of the value of the ore mined. That was super taxation upon super taxation. With the decision of the Supreme Court a year ago sustaining the constitutionality of that tax I think there is no question of the

right of all the state legislatures to levy that sort of a super tax on top of super taxes upon mines. The Supreme Court of the United States has said that it is perfectly legal for the state legislatures to single out a particular industry and levy not only excess taxes upon it, but super taxation upon it in addition, without any justification or reason. As I read that decision that law is constitutional and can be enforced.

A few of the bills introduced in the last year may bring to you gentlemen how great a menace this is. For example, Georgia passed a law authorizing a tax of 2 percent. Pennsylvania has passed a license tax on mining of 1½ percent tax per ton of anthracite coal mined, and that has been sustained in the United States Supreme Court. West Virginia has also a general sales tax on the privilege of mining coal and oil. Texas has levied a gross proceeds tax, in addition to taxes upon oil, and has levied a special production tax on sulphur, which is extensively mined in Texas. Louisiana in 1922, following its previously announced policy, levied a severance tax on natural resources, in addition to all other taxes. That has been sustained by the state courts. Kentucky has levied a similar tax. Arkansas in 1923 levied a severance tax on the gross value of products of all natural resources. Texas has levied a tax on gasoline. Similar taxes have been levied in Alabama, Indiana, Maine, South Dakota, Tennessee, Virginia, Washington and West Virginia. All these are special super taxes on mines, not as lieu taxes which might be defensible, but excess taxes. Recently, the representative of the State of Minnesota in Congress, Mr. Keller, proposed that the United States Congress levy upon the natural resources of the United States a one percent tax computed on their value, which he estimates at some \$65,000,000,000, and he estimates that his tax would raise \$600,000,000 for the United States.

When legislatures all over the country are advocating super taxation of mines, it is a real danger.

What is the alleged justification for these taxes? It is the theory that the natural resources of the country originally belonged to the people, and that somehow these mine owners and timber and oil men have acquired possession of this "natural heritage" of the people, and are using it for individual profit. That is the theory on which they levy these taxes. That is one claim. Another claim in support of these taxes is that natural resources do not belong to the individual until they are reduced to possession. Like wild animals they are owned by the people until by trapping, catching or shooting reduced to individual ownership. Therefore an excise may

be levied at the point of reducing to possession.

Both theories are false and specious. They are merely an excuse for confiscation of natural resource industries. Every one knows that the natural resources are carried by the mine owners, the oil companies and timber men, that they have acquired them and paid for them with sweat and toil and at capital risk. When discovered the mine is just as much their property as are the crops of the farmer his property, or as the wage of laborer, his, at the end of the day.

For example the advances in copper treatment have created a new industry, made what was barren and useless rock valuable natural resources. Can it be said that the barren rocks which had no value at all were the natural heritage of the people and that that industry has filched that natural heritage from the people? Yet that is the theory on which these super taxes are levied.

It is an easy thing to tax a mine. Mines are not fugitive. They cannot run away. They have not the mobility of personal property or capital. They possess not the flexibility of many businesses. They are serfs fettered to the land, they are in the earth and of it, therefore they are the natural objects of taxation and of rapacity of local legislatures.

Thus is exhibited the spectacle of predatory legislatures plundering the aegis of law that the natural owners of these resources discovered, created, built up, earned and vested in them and unless it is combated in an organized way the industry will lag and eventually be destroyed. There is another aspect of the natural resource industries that should be hammered into legislatures and taxing bodies.

We have no strangle hold on the great resources of this world. There are other sources of supply, greater by far than ours. The greatest iron ore deposits are not in this country but in Brazil. The greatest copper deposits are not in this country but in Chile and in Africa. Not only have these countries almost countless copper deposits, and the advantage of cheap labor, but practical exemption from taxation. Under the best conditions the United States mines can hardly compete with them. If super taxation is added what will become of our industries? Do the legislators realize that? They should be made to realize that already our mines can scarcely compete with these new sources of cheap supply. Only too late they will wake up to the realization that other nations have the trade in copper.

Another point—do any of you gentlemen realize—I assume you do—the huge sums of money that must be sunk before a mining venture can be brought to a

successful fruition? I had no idea of it. I thought I had, but I picked up the other day an interesting letter from Daniel Guggenheim to Mr. Mellon, January 22, 1924. He referred to the enormous sums that must be risked by investors before they can produce dividends or profits from a mining venture. He pointed out that the Guggenheims spent some \$22,000,000 in the Kennecott Copper Mining Company before a dividend had been paid; that they had invested some \$50,000,000 in the Chile mines before a profit was returned, and a like amount in the Braden mines of Chile before they had been able to pay a cent of dividends. Who can say that those mines when finally successful were not earned by these men, by reason of their capital, their intelligence, their risk, work and labor? Facts like these should be brought to the attention of the taxing body, before it adopts so special a theory as that of "natural heritage."

Now what is back of all these trends to super taxes? There is something far more serious. First, there is the great problem of absentee ownership, that all the natural resource industries have. They are almost entirely owned outside of the states where they are located. That is a real problem. It cannot be ignored. It exists and provokes antagonisms and a vindictiveness against the mines. It is the red flag that enrages the bull. We may say it is foolish, and we may try and argue with the bull and say that it is unreasonable, but the fact remains that it does enrage him.

Absentee ownership is the red flag and the bull is the state legislatures that are levying the taxes, and that is a problem that you will have to consider and deal with. I have thought of it very seriously. I am frank to say that no satisfactory solution has been suggested. But it must be met as truly as the old absentee class of land owners in England in the feudal days had to meet it. They ignored it and their fate is history.

Again, there is another menace arising on our political horizon. That is the menace of communism, the menace of Karl Marx, and his cult, his cult of ownership of industries and the means of production. State ownership of wealth, of natural resources, and abolition of all private ownership as in the modern form of Bolshevism. That is a real menace, and it is back of all these urges against the private ownership of mines. It is increasing. One of its manifestations is the extension of government activities in all forms.

It has been said that if not the most governed we are the most governmented people on earth.

This urge for extension of government activities, the centralization of state and federal activities, is but an expression in concrete form of the ever-

growing conviction of the socialistic, communistic, bolshevistic elements that there is no need of a revolution here or no need to abolish our Constitution or form of government. But, through the instrument of class taxation with a concomitant enlargement of government control and activity, private capital and individual wealth can be destroyed or distributed. Not revolution but super taxation is their modern legal weapon.

If I have brought home to you the necessity of an organized fight against what is an organized attack on the ownership of the natural resources of this great country, although concealed, I have accomplished my object. I trust that through some organization this great industry will meet this attack on its life, and through it, on the future of the American nation.

MINE MACHINERY SUIT

THE mining machinery industry is the subject of an anti-trust prosecution on the part of the Government. By direction of the Department of Justice, the district attorney at Columbus, Ohio, has filed equity suits against the Sullivan Machinery Company, Goodman Manufacturing Company and Morgan-Gardner Electric Company of Chicago, and the Jeffrey Mfg. Co., of Columbus, to cancel patent license agreements under which these companies have licensed other coal mining machinery manufacturers to manufacture coal cutting machines, the designs of which are controlled by patents owned by the companies against which the suits have been filed. The Government questions the right of these companies to acquire patents regarded as indispensable, and the propriety of these companies in stipulating the terms of sale which licensees under the patents are required to observe. The Government contends that while the patentee may fix the price and terms of sale of the patented articles, it cannot require the licensee under the patents to do so. The Supreme Court has decided that a patentee or licensee having once parted with title to the patented article, cannot either by notice or contract stipulate the resale price at which the purchaser must sell it. The aim of the department is to extend the law so that a patentee cannot by patent license contract, regulate the selling price and terms of sale of the patented article in the first instance. The department charges violation of the anti-trust law by these companies on the ground that they have resorted to price fixing in obtaining a monopoly of the manufacture of mining machinery. The court is asked to issue a restraining order to prevent further enforcement of contracts now in operation between these companies.



ZINC INSTITUTE IN ANNUAL SESSION

A. E. Bendelari Elected President—Continuing Of Advertising Policy Endorsed—Sessions Constructive—Cooperation Is Keynote

THE sixth annual meeting of the American Zinc Institute, held at the Hotel Chase, St. Louis, Mo., April 28 and 29, was the most critical, at times severely so, but constructive conclave yet held by that organization.

To complete its chief aims—better galvanizing and advertising—it elected as its leader for the coming year, A. E. Bendelari, of Joplin, Mo., vice president of the Eagle-Picher Lead Company.

In his opening address, President Wallower severely criticised interests, governmental and otherwise, that were spreading "insidious propaganda," not only hurtful to the zinc industry, but to the entire business structure of the nation. He urged closer cooperation in the zinc industry, and emphasized his faith in the advertising campaign, out of which he said would come a better and larger industry.

Immediately after opening the meeting President Wallower introduced Mayor Henry W. Kiel, St. Louis, who officially welcomed the 150 guests. Sidney H. Davis, Baxter Springs, Kans., president of the Tri-State Section of the American Zinc Institute, replied to the welcoming address.

Two of the most important papers read at the Monday morning session were those of Edward V. Peters, of the New Jersey Zinc Company, entitled, "The American Zinc Institute," and, the report of the advertising committee, read by E. S. Gellatly.

Mr. Peters reviewed the accomplishments and some of the short-comings of the Institute. His reflection on the failure of the producers of slab zinc to establish closer contact with the consumers, brought out some debate between C. T. Orr, of Webb City, president of the Athletic Mining and Smelter Company, E. H. Wolff, of Joplin, now a mine operator, and E. L. Murphy, a broker of Chicago, as to the relative merits and demerits of the broker to the zinc industry. Mr. Peters advocated strict adherence to the principles of the organization, which are: cooperation and

coordination. In summing up, he said: "Do you think that we can go on and on and meet the situation of the future individually and independently? That day is over, and the sooner we realize it the better for our industry. In conclusion, therefore, I urge upon all of you to approach the consideration of all problems affecting our industry with a broader viewpoint, with consideration for the welfare of the industry as a whole. As the industry prospers, so shall we individually; as the industry fails to prosper, so shall we individually. What a great personal satisfaction those of us now in the industry may justly feel, if, after a life-time of association with it, we can pass out with the realization that we have contributed toward making the industry bigger and better through our association with it; and when our work is done to hand back not the one talent which was bestowed upon us, but several, and receive * * * from the American public the benediction, "Thy work is well done."

Mr. Gellatly's report for the publicity committee recommended the raising of \$200,000 for advertising during the coming year, instead of the \$100,000 as advocated last year. The report also touched upon the poor response that the committee had received in the way of funds for the past year.

Upon request, Secretary Stephen S. Tuthill, briefly outlined the response made to the committee's request for funds.

M. F. Owens, of Miami, Okla., treasurer of the Tri-State Zinc and Lead Ore Producers' Association, reported that that organization now had more than \$10,000 set aside for the advertising campaign, which would be turned over as soon as some real constructive program was outlined.

The committee's report was referred to the board of directors with instructions to report it back at a latter meeting.

Although extemporaneous, the talk of James F. Callbreath, secretary of the

American Mining Congress, was one of intense interest, especially so to the mining men. He outlined the tax work of the Congress, as it related to the new-discovery clause. He also made some startling but true statements relative of cooperation, and also outlined many almost insurmountable obstacles placed in an industry's path which combatted the principle of cooperation.

At the afternoon session, the directors' report on the publicity committee's recommendations was read. It advocated and reiterated its belief in the advertising campaign as outlined the year previous, and recommended the original \$100,000 amount be adopted and a determined effort to raise it be made. The report was adopted.

Carl Y. Semple, of Baxter Springs, Kans., who has had some experience in advertising zinc shingles the last two years, read a paper on "Zinc as a Roofing Material" at the afternoon session.

Roy De Staeleber of Beck and Corbitt Iron Co., St. Louis, speaking of galvanizing from the viewpoint of the jobber, laid the blame for the poor quality of zinc-coated material directly at the door of the zinc industry. He said the fault of the zinc industry in this respect was due to the lack of an "attitude." He asked both the miner and smelterman, "how in the world do you expect to sell the poor farmer, when you do not use your own product?" He said that he had recently made a trip through the Tri-State mining district, and while there found that the mine operators were using almost nothing but black pipe. He also stated that it was only recently he sold a smelter its first carload of galvanized sheets for roofing purposes.

The first day's meeting closed with a banquet at the Hotel Chase at which W. K. Kavanaugh, president Southern Coal, Coke and Mining Co., and E. J. White, vice-president and general solicitor of the Missouri Pacific railroad, were the principal speakers. Dan Dwyer and E. H. Wolff (Continued on page 280)

IMPORTANT BILLS REVIEWED IN THIS ISSUE

MINING—

- S. 2797: War Mineral Payments.
 H. R. 5722: Helium Production.
 H. R. 9029: Sinnott (R.), Ore. Potash Mining.
 H. R. 9019: Sutherland (R.), Alaska. Mineral Lands.
 S. J. Res. 121: Dial (D.), S. C. Raw Material Exports.
 H. J. Res. 255: Rogers (R.), Mass. Mint Coinage.

COAL—

- H. R. 9195: Taber (R.), N. Y. Quality Standard.

LABOR—

- H. R. 7698: Strike Breakers.
 H. J. Res. 184: Child Labor Amendment.

TRANSPORTATION—

- H. J. Res. 141: Rate Revision.
 S. J. Res. 107: Rate Principle.
 H. R. 9244: Berger (Soc.), Wis. Government Ownership.

INDUSTRIAL—

- H. R. 9199: Wilson (D.), La. Stream Pollution.
 H. R. 7995: Immigration Restriction.
 H. R. 8984: Huddleston (D.), Ala. Commodity Standards.
 H. R. 7959: Soldier Bonus. (Enacted into Law.)

TAXATION—

- H. R. 6715: Revenue Revision.
 S. 3273: Shortridge (R.), Calif. Tax Assessments.

LEGISLATIVE REVIEW

*Recalcitrant Congress Harries President—Veto's Forced On Important Legislation—
 Tax Program Endangered—Legislative Jam Precedes Adjournment*

“WE will,” says Congress.
 “I won’t,” says the President.

This concise dialogue aptly illustrates the progress of legislation as Congress and the President are locking horns over national measures. Exercising its right to pass legislation, Congress is finding itself against a veritable stone wall in the conservative New Englander whose mind does not run along the same channel as that of the legislative. While President Coolidge sat with the Senate as its presiding officer before his elevation from the Vice Presidency, this association has not dulled his perception of what is best for the country, notwithstanding the expression of the national legislature. In fact Congress has courted Presidential displeasure over some of its acts because of pre-announced views of the executive on most of the bills which have drawn his veto. No President in recent years has had so many complex situations placed before him involving acute domestic and foreign considerations as has Mr. Coolidge, but it can be said to his great credit that he has not swerved from the path which he believes to be the ultimate goal to which the country should be directed.

MEASURES SPEEDED

With the speed of the wind, Congress is racing toward adjournment early in June in order that no second attraction may dim the splendor surrounding the quadrennial political conventions and campaign preceding the Presidential, Congressional, and Senatorial elections November 4. Much legislation is being enacted and sponsors of measures are trying to get their bills through before the curtain falls, as during the short

session beginning next December and terminating in March, 1925, little time will be available for legislation of a general character. The fever of investigations has abated and Congress and its committees are busy in passing on the thousands of bills which have been introduced on a myriad of subjects.

The tax revision bill was passed by both houses in a form entirely different from that originally recommended by the Treasury Department and may force the President to send it back to Congress without his signature on the ground that its provisions will not enable the government to properly finance the country along lines which have been pursued since the close of the war, which are, briefly, liquidation of the public debt and economy of government expenditure. As finally passed by the Senate it is estimated the bill will fall short many million dollars in meeting the necessary

revenues, to say nothing of imposing high taxes on industry with no chance of such revenues being received as money will be diverted to other and untaxed purposes.

Mining subjects have not escaped Congressional attention during consideration of national questions. The Senate gold and silver commission has been continuing its investigations with the expectation that they will be concluded by December. Because of expenditures by it and other investigating committees, the Senate was called on to provide funds for their continuation. While it was shown that the gold commission had expended more than \$50,000, which was in excess of funds expended by other investigating committees, including the celebrated oil committee, no question was raised as to the propriety of these expenditures. In fact Senator Robinson, Democrat, Arkansas, in public debate, stated that no suggestion had been made that the expenditures of the gold commission had been unwise.

The bill to make available \$2,500,000 additional to pay war minerals claims has been passed by the Senate and is awaiting action by the House.

Another bill on which action is being sought is the measure to promote under the direction of the Interior Department the production of helium.

MINE BILLS

The bill to extend the mineral development laws to Annette Island, Alaska, with a tax of one percent on income of mines, has been introduced.

Bills have been passed by both Houses authorizing leases for oil and gas on unallotted Indian lands for ten years or



Daily News, Pomeroy, Ohio.

as long thereafter as these minerals are found in paying quantities.

A mineral exhibit by the Bureau of Mines in Spain in 1927 is proposed in a recently introduced bill.

The sale of raw materials to Germany under a trade investment corporation is proposed in a bill favorably recommended by the Senate committee on agriculture. In this connection it is interesting to note that a similar committee in the House devoted considerable space in a report on a bill to aid in the exportation of surplus agricultural products as to why copper was not included in its provisions. Among the reasons given was that copper prices do not vary to the extent of farm products and also that a much smaller number of persons is engaged in the copper industry as compared to farming.

The market for silver and copper would be increased to some extent under bills which have been introduced providing for the coinage of money to mark the celebration of various historical events. These bills call for the coinage of more than five million fifty-cent silver pieces and one million one-cent copper pieces.

COAL QUALITY

While Congress has given practically no attention to coal bills which have been introduced, their introduction continues. The latest measure was proposed by a New York Congressman who suggests that the shipment in interstate commerce of coal that is not ninety-five percent pure coal shall be prohibited.

Transportation legislation has been prominently before Congress. Angered because the committee would not take up the bill, Representative Barkley, Democrat, Kentucky, invoked the new rule and had the committee on interstate commerce discharged from consideration of his bill to abolish the railroad labor board and to substitute mediation boards. A similar bill has been approved by a sub-committee of the Senate committee, with an important amendment to the effect that the government may take under receivership railroads affected by strikes involving a tie-up of transportation.

In the Senate a new principle of rate-making was enunciated in the passage of a resolution to the effect that the Interstate Commerce Commission shall adjust freight rates in industries so that commodities may freely move with fair profit to the producer and be sold at a reasonable price to the consumer.

The spectre of government ownership again lifted its head when Representative Berger, the Socialist member from Wisconsin, proposed a commission to value railroad, express, telegraph, and telephone lines, with a view to their purchase and operation by the government. Waterway transportation to relieve

freight congestion and reduce transportation rates was proposed in the passage by the House of a bill to create a federal inland waterways corporation.

Government prohibition of child labor is nearing enactment. The House passed the bill submitting to the States a constitutional amendment giving Congress power to prohibit, regulate and limit the labor of persons under eighteen. A similar proposal is before the Senate, whose friends are seeking an early vote.

The competition between the Department of Commerce and the War Department to administer proposed legislation forbidding the discharge of oil into navigable streams has resulted in favor of the War Department, through action of the House river and harbor committee in deciding in favor of the war officials. New bills have been introduced on this subject which place under jurisdiction of the War Department regulation of the discharge of oil by vessels, oil wells, refineries, etc.

MINING

War Minerals

S. 2797. Reported by the House Mines and Mining Committee. It appropriates \$2,500,000 to pay war mineral claims. A resolution advancing its consideration by the House was presented by Representative Robsion (Rep., Ky.), chairman of the committee.

H. R. 8709. Introduced by Mr. Raker (Dem., Calif.). Referred to the Committee on Mines and Mining. This is similar to the foregoing.

Helium Production

H. R. 5722. Reported by the Military Committee. It provides for the conservation, production and exploitation of helium gas under the Interior Department. It will require an appropriation of \$5,000,000. Helium production plants will be under the Bureau of Mines. A resolution advancing its consideration by the House was introduced by Representative Frothingham (Rep., Mass.).

Potash Mining

H. R. 9029. Introduced by Mr. Sinnott (Rep., Ore.), upon request of the Interior Department. Referred to the Committee on Public Lands. It proposes to promote potash mining under a system of prospecting permits and leases granted by the Interior Department. It is similar to S. 3005 introduced by Senator Ladd (Rep., N. D.) and reviewed in the May issue of the Mining Congress Journal.

H. R. 9030. Introduced by Mr. Sinnott (Rep., Ore.), by request of the Interior Department. Referred to the Committee on Public Lands. This bill proposes to consolidate the land service in Alaska by substituting for the present Surveyor General Office and Land Of-

fices a superintendent of public lands for Alaska with branch offices.

Alaska Minerals

H. R. 9019. Introduced by Mr. Sutherland (Rep., Alaska). Referred to the Committee on Public Lands. It proposes to extend the operation of laws of the United States relating to the development and disposition of minerals to lands in Annette Island, Alaska. Under the bill the Interior Department would be authorized to impose a tax of one percent on the net income of operating mines on that island for the benefit of the town of Metlakatla.

Mineral Laws

S. 2798. Enacted by Congress and made a law by approval of the President. This law authorizes mining leases on unallotted lands in the Kaw Indian reservation in Oklahoma.

H. R. 2887. Reported by the Senate Indian Committee. This bill provides that the production of oil and gas and other minerals on restricted lands of the Kansas or Kaw tribe of Indians in Oklahoma may be taxed by that State.

H. R. 6298. Passed by the House and Senate. It authorizes the leasing for oil and gas mining purposes of unallotted lands on Indian reservations. The bill provides that unallotted lands on reservations other than those of the Five Civilized Tribes and the Osage Indians, which are subject to leases for mining purposes for ten years under the act of Feb. 28, 1891, may be leased at public auction by the Interior Department with the consent of the Indians for oil and gas mining purposes, for not exceeding ten years and as long thereafter as oil or gas shall be found in paying quantities. It is provided that existing leases may be extended for a like period. It is also provided that the production of oil and gas or other minerals on these lands may be taxed by the State in which located.

S. 2314. Passed by the Senate. It authorizes leases on unallotted Indian lands for oil and gas for ten years or as long thereafter as oil and gas are found in paying quantities.

H. R. 6483. Enacted by Congress and made a law by approval of the President. This law provides that any right to or interest in lands, money or mineral interests in the Osage Indian reservation of Oklahoma held by others than Indians, may be sold, assigned or transferred under regulations of the Interior Department.

H. J. Res. 258. Reported by the Indian Committee. It provides for an investigation by the Committee of Oklahoma Indian Affairs, including rights of Indians to oil.

H. J. Res. 60. Reported by the Committee on Territories. It authorizes a

system of highways on the Seward peninsula of Alaska which will connect up with coal deposits of Kugruk River, Chicago Creek and Keewalik mining districts of Alaska.

H. R. 4830. Passed by the House. This bill provides for extension of national forests and to promote timber production. It was amended to forbid the creation of national forests on lands reserved for phosphate, mineral and other deposits and for water power purposes. It also provides that all property rights retained by owners of land transferred to national forests shall be subject to state taxation.

The House rejected an amendment offered by Rep. Raker (Dem., Calif.) to forbid reservation of mineral rights in such land.

Mine Exposition

H. J. Res. 261. Introduced by Mr. Reed (Rep., N. Y.). Referred to the Committee on Expositions. It proposes to appropriate \$700,000 for participation by the United States in an exposition at Seville, Spain, in 1927. It would include an exhibit by the Bureau of Mines of oil, asbestos, carborundum and other mining products.

Trade Investment Corporation

S. J. Res. 121. Introduced by Mr. Dial (Dem., S. C.). Reported by the Committee on Agriculture. It creates an alien investment trade corporation with \$150,000,000 capital to make loans to Germany, Austria and Hungary for the purchase of raw materials in the United States.

S. 2710. Introduced by Mr. Dial (Dem., S. C.). Reported by the Committee on Agriculture. This is similar to the foregoing.

Mint Coinage

H. J. Res. 255. Introduced by Mr. Rogers (Rep., Mass.). Referred to the Library Committee. It proposes to coin 300,000 fifty-cent silver pieces in commemoration of the 150th anniversary of the Battle of Lexington and Concord.

H. J. Res. 256. Introduced by Mr. Dallinger (Rep., Mass.). Referred to the Library Committee. This is similar to the foregoing.

H. J. Res. 259. Reported by the Library Committee. It proposes to authorize the coinage of 300,000 fifty-cent silver pieces on account of the Lex-

ington and Concord battle anniversary, and is a substitute for the foregoing resolutions.

H. J. Res. 263. Introduced by Mr. Beedy (Rep., Me.). Referred to the Library Committee. It authorizes the coinage of one million one-cent copper pieces commemorating the 100th anniversary of the visit of Lafayette to the United States.

S. J. Res. 123. Introduced by Mr. Copeland (Dem., N. Y.). Referred to

tee on Interstate Commerce. It proposes to "prevent the shipment of impure coal," and provides as follows:

"It shall be unlawful for any individual, firm or corporation to ship from a point in any State to a point in another State, to sell, or in any way dispose of fuel, anthracite or bituminous coal in interstate commerce, that is not 95 percent pure coal, and accompanied with a certificate to that effect signed by the miner or producer thereof and also giving the name of the individual, firm or corporation producing and shipping the same, and giving the name and location of the mine from whence shipped.

"Every firm, individual or corporation violating the foregoing provisions shall be subject to a fine not exceeding \$15,000 or be imprisoned for not more than two years, or both, in the discretion of the court.

"This act shall take effect immediately."

LABOR

Strike Breakers

H. R. 7698. Reported by the Committee on Labor. This bill would forbid the transportation of labor to a strike district unless said labor was informed of conditions prevalent there. It came up in the House during consideration of unobjectioned bills but went over on the objection of Rep. Blanton (Dem., Tex.), who said the bill was class legislation.

S. Res. 202. Introduced by Mr. Ashurst (Dem., Ariz.). Reported by the Committee on Labor. This bill calls for a report by the Department of Labor as to the admission of laborers from Mexico, it being alleged that large numbers are being imported by mining companies. The committee, however, eliminated reference to such importation and reported a simple resolution calling on the Department for a report as to the number of immigrants admitted to the United States during the past year. Its passage was objected to by Senator Willis (Rep., Ohio) on the ground that it is not necessary.

S. 3218. Introduced by Mr. Jones (Rep., Wash.). Referred to the Committee on the District of Columbia. This is known as Sunday Rest Day bill which would make it unlawful for any



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There is hope

the Library Committee. This is similar to the foregoing.

H. R. 9241. Introduced by Mr. Johnson (Rep., Wash.). Referred to the Coinage Committee. It proposes to authorize the coinage of five million fifty-cent pieces in celebration of the 100th anniversary of the founding of Fort Vancouver, Washington.

S. 3317. Introduced by Mr. Jones (Rep., Wash.). Referred to the Finance Committee. This is similar to the foregoing.

COAL

Quality Standard

H. R. 9195. Introduced by Mr. Taber (Rep., N. Y.). Referred to the Commit-

person to labor on that day in the National Capital.

H. R. 9009. Introduced by Mr. Cooper (Rep., Ohio). Referred to the Committee on Interstate Commerce. This bill proposes to abolish the Railroad Labor Board and to substitute boards of mediation and conciliation for the arbitration of railroad labor disputes.

Child Labor

H. J. Res. 184. Passed by the House. This is a proposed constitutional amendment, which, if passed by the Senate, approved by the President and ratified by three-fourths of the states, would give Congress power to limit, regulate and prohibit labor of persons under eighteen. During its consideration Rep. Ramseyer (Rep., Iowa) proposed an amendment to limit the application of the proposed law to children under sixteen in mines, quarries, mills, workshops, factories or manufacturing establishments. The amendment was defeated by a vote of 120 to 158.

S. J. Res. 1. Reported by the Judiciary Committee. This is similar to the resolution passed by the House.

H. R. 8663. Introduced by Mr. Wefald (F.-L., Minn.). Referred to the Judiciary Committee. It proposes to prevent abuses of judicial process in cases involving or growing out of labor disputes, by forbidding restraining orders or injunctions by the courts unless necessary to prevent injury to property.

Labor Disputes

H. R. 7358. The House Committee on Interstate Commerce was discharged from consideration of this bill on motion of its author, Representative Barkley (Dem., Ky.), and it is now being considered by the House. It abolishes the Railroad Labor Board and substitutes a Board of Mediation to settle railroad labor disputes.

TRANSPORTATION

Rate Adjustment

H. J. Res. 141. Reported by the Committee on Interstate Commerce. It directs the Interstate Commerce Commission to adjust the rate structure.

S. J. Res. 107. Passed by the Senate. It declares agriculture to be "the basic industry of the country," and enunciates the following rate-making principle:

"That it is hereby declared to be the true policy in rate making to be pursued by the Interstate Commerce Commission in adjusting freight rates, that the conditions which at any given time prevail in our several industries should be considered in so far as it is legally possible to do so, to the end that commodities may freely move with fair profit to the producer and sold at a reasonable price to the consumer."

H. R. 9173. Introduced by Mr. Sprουλ (Rep., Kans.). Referred to the Commit-

tee on Interstate Commerce. It provides in detail regarding the furnishing of cars to shippers, receiving freight for shipment, the prompt transportation of freight, and the making and publishing of rules for the transportation of freight.

Government Ownership

H. R. 9244. Introduced by Mr. Berger (Socialist, Wis.). Referred to the Interstate Commerce Committee. It provides for government ownership and operation of railroad, telegraph, telephone and express companies under a department of Transportation and Telegraphs.

Waterways

H. R. 8209. Passed by the House. It appropriates \$5,000,000 to capitalize a Federal Inland Waterways Corporation under the War Department to promote water transportation.

S. 3161. Reported by the Commerce Committee. This is similar to the foregoing.

INDUSTRIAL

Oil Pollution

H. R. 9199. Introduced by Mr. Wilson (Dem., La.). Referred to the Committee on Rivers and Harbors. It authorizes the War Department to regulate the discharge of oil into navigable rivers from oil wells, terminals, refineries, tanks and storage places, in the interest of prevention of stream pollution.

H. R. 9175. Introduced by Mr. Lineberger (Rep., Calif.). Referred to the Committee on Rivers and Harbors. This is also an anti-oil pollution measure, to be administered by the War Department. It is aimed against discharge of oil by vessels into coastal navigable waters. It also authorizes the Department to investigate and report within two years as to other polluting substances with proposed remedial legislative suggestions.

Immigration

H. R. 7995. This is the immigration restriction bill, which has been finally passed by both House and Senate, and sent to the President. It restricts immigration to two percent of aliens in the United States in 1890, from July, 1924, to July, 1927, after which annual immigration will be restricted to 150,000 persons.

S. 3112. Introduced by Mr. Pepper (Rep., Pa.). Referred to the Committee on Interstate Commerce. It proposes to regulate in the interest of safety, the distribution and sale of dangerous caustic or corrosive acids, alkalis, and other substances.

H. R. 8917. Introduced by Mr. Griest (Rep., Pa.). Referred to the Committee on Interstate Commerce. This is similar to the foregoing.

Calcium Arsenate

H. J. Res. 250. Introduced by Mr. Brand (Dem., Ga.). Referred to the Committee on Agriculture. It proposes to appropriate ten million dollars for the purchase and sale by the government of calcium arsenate and nitrate of soda.

S. 3214. Introduced by Mr. Norris (Rep., Nebr.), by request of former Rep. Lloyd (Dem., Mo.). Referred to the Committee on Agriculture. It proposes to create a federal chemical corporation to develop Muscle Shoals.

S. 3158. Introduced by Mr. Owen (Dem., Okla.). Referred to the Banking Committee. It would forbid the use of the mails, telegraph and telephone, in promotion of fraudulent stock exchange transactions.

Commodity Standards

H. R. 8984. Introduced by Mr. Hudleston (Dem., Ala.). Referred to the Committee on Interstate Commerce. The title of the bill is "to prevent frauds in commerce," and it provides as follows:

"That the Bureau of Standards is authorized to adopt and prescribe marks indicating the quality, durability, usefulness, size, strength, grade, quality, composition, origin, date or process of production, weight, and measure of all of the subjects of commerce, and to adopt regulations for the use of such marks thereon or therewith.

"It shall be unlawful to place in interstate commerce any subject of commerce without having complied with the regulations, if any, applicable thereto which may have been adopted under authorization of this Act.

"It shall be unlawful for any dealer, or any person who has acquired same for the purpose of resale, to remove from any subject of commerce any mark placed thereon in compliance with this Act.

"Violation of this Act shall be punishable by imprisonment for not more than two years and a fine of not more than \$5,000, either or both."

H. J. Res. 243. Introduced by Mr. LaGuardia (Rep., N. Y.). It proposes to stabilize money values, and requests the President to invite foreign countries to a conference to establish and maintain a permanent money exchange commission, which shall determine the relative exchange value of gold and other currencies of all nations.

H. R. 8635. Introduced by Mr. Howard (Dem., Nebr.). Referred to the Committee on Ways and Means. It proposes to change the tariff duties on table, household and hospital utensils made of iron, steel, aluminum, copper, brass or other base metal. The duties on iron and steel articles are fixed at 2.5 cents per pound and 15 percent ad valorem; those of aluminum at 5.5 cents per pound and (Continued on page 284)

WORLD FAMOUS PLACERS

Great Fortunes Amassed Through Production California's Marvelous Placer Mines—Delegates To Sacramento Convention To Visit These Properties

DELEGATES to the Twenty-seventh Annual Convention of the American Mining Congress, to be held in Sacramento the week beginning September 29th, will have the opportunity of visiting the famous old mining camps of Sierra County.

No district in California can boast of a more romantic history than Sierra County. Discovered and settled in 1849, a populous territory in 1850 and a marvelous producer of gold for seventy-five years, Sierra stands in an enviable position among her sister counties of the Sierra Nevadas.

The geological and topographical conditions of the county are ideal. Fully one-half of her 1,000 square miles are mineral lands. This area covers the entire west half of the county.

Three distinct quartz zones cross the county with a general strike to the north and a general dip to the east. The easterly zone lies on the porphyry contact and extends through Sierra City. The westerly zone, on the serpentine contact, reaches through Alleghany, Forest, Downieville and north through the county. Between these two zones lies the middle belt, consisting mainly of slates, limestone and granodiorite.

200 MILES OF VIRGIN CHANNELS

The entire western part of Sierra County is covered by huge areas of gravel, estimated at nearly 200 miles of virgin channels. Portions of these channels were worked in the early days by the hydraulic method. In 1890, when the anti-debris law prohibited indiscriminate tailing into the rivers, the hydraulic mines were forced to close, and since that year this highly effective method

By R. F. TAYLOR, C. E.*
Downieville, Cal.

of mining has been prosecuted but little in Sierra County.

Included in the Mining Congress program will be trips to Downieville, Sierra City, Alle-

its placers were world famous. White men were living here in 1849, and by 1852 the town had a population of nearly 10,000 men, drawn to the camp by the fabulous wealth in the North Yuba River.

Tales of the fortunes taken from this historical stream almost challenge belief. It is impossible even to estimate the gold production in the first ten years following the discovery in 1849, but a few authentic instances will give an idea of the value of the early placers.

In the old steamboat diggings, just below the town, \$125,000 was recovered from the river by five men in five days. The owners of the Tin-Cup diggings, in the heart of the town, took each for his share of the day's clean-up a level tincup full of gold dust, nor was the day's work declared finished until each partner had his share. Equally incredible clean-ups were made at the Blue Banks, just above the town on the North Fork.

No active placer mining is now being conducted in the immediate vicinity of Downieville, but within a radius of five miles lie numerous former large producers, most of which were closed while still productive by the anti-debris law of 1890.

NOTABLE PLACER PRODUCTION

Among the most notable of these placers are the Monte Cristo, which has produced in the neighborhood of \$3,000,000; City of Six, with \$2,000,000 to her credit; White Bear, \$200,000; Telegraph, \$500,000; Wide Awake, \$120,000; Pilot and Craigs Flat, amount unknown. The



Downieville, Sierra County, center of the oldest and newest gold fields in California. Above—Gold Bluff Mine. Downieville, which produced \$1,500,000 in gold. Below—Sierra Buttes Mine, Mill No. 9, Sierra City, a property credited with a gold production of \$18,000,000

ghany and Forest, where the visitor may see the relics of the early fifties and the prosperous modern mines which have given Sierra County her position in the mining world.

Downieville, the county-seat, and perhaps the first town to be visited by the Mining Congress delegates, lies on the forks of the North Yuba River at an elevation of about 3,000 feet. Forty-six miles of splendid highway connects the town with Nevada City.

DOWNIEVILLE'S PLACERS WORLD FAMOUS

In the early fifties Downieville was one of the largest towns in California, and

*Deputy County Surveyor of Sierra County and Secretary of Sierra County Mining Association.

Excelsior and the Eureka mines produced an enormous amount of gold, the exact figures of which are not available. Of this group only the Wide Awake is operating today.

Downieville is on the westerly quartz zone of the county on the well-defined Alleghany contact. Here is situated the Gold Bluff, with a production of \$1,500,000; Oxford, \$250,000; Triple Pocket, \$150,000; and the Oro, City of Six (quartz), Standard and Finney Mines, which have produced each from \$50,000 to \$75,000.

Besides this group are numerous undeveloped properties of promise, including the Bessler, which is operating a five-stamp mill in Downieville, the Aricola, Mexican, Loosner, Eagle Bird and Comet. The last two mentioned lie on the middle quartz zone.

Sierra City, thirteen east of Downieville on the South Fork, lies in the easterly quartz belt, or the porphyry contact.

This famous old camp was the scene of the first quartz mining in Sierra County, and the production of this district almost rivals that of the well-known Alleghany district, in the southern part of the county.

SIERRA BUTTES YIELDED \$18,000,000

The oldest and greatest producer in the Sierra City district is the Sierra Buttes, from which \$18,000,000 has been taken. This famous mine was worked through nine levels and at one time used seventy stamps to crush the ore.

The Young America, north of Sierra City, produced \$1,500,000. The rich float from this vein was discovered accidentally by a shepherd.

A like amount of gold was produced by the Keystone, west of the town. The Bigelow, Chipps, Primrose, Monarch, Empire and Willoughby Four Hills, Mountain and Colombo mines—all were large producers.

Notable undeveloped properties in this district include the Buttes Saddle, Shamrock, Euclid, Butcher Ranch, Roman and Kentucky.

But little gravel mining has been done in the vicinity of Sierra City, as the river gravels failed above where the Sierra Buttes ledge was cut by the present drainage. However, the few gravel mines that were worked below this point were extremely rich.

Drift mining is now being conducted east of the town at the Hilda and Swastika mines.

The hydraulic mining district lies about five miles north of Sierra City. Most of these mines were closed by the

anti-debris law, but the Pride Hydraulic Mine has recently been re-equipped for washing.

\$1,000 PER FOOT OF CHANNEL

Forest, in the southern part of the county, lies on the westerly quartz zone, and in the early days was the center of the richest drift mining district in California.

Here was located the famous Bald Mountain mine, which produced \$3,800,000, or \$1,000 per running foot of channel. The Bald Mountain Extension had produced \$2,000,000 when the channel diked and was lost. Large sums have since been spent in search of the continuation of this channel, which is still lying intact beneath the lava on the Ruby ridge.

The Ruby has a record of \$1,300,000, with the gravels in the north end of the claim intact.

Beside these big producers a dozen other placers added their wealth to Forest's credit, but their production figures are not available. This list includes the Corotoman, Young America, South Fork, North Fork, Live Yankee, Red Star and Gold Star. On the ridge north of the town lie the Mable Mertz and the Arizona, both undeveloped mines.

The quartz mines of the Forest district include the Kate Hardy, Brush Creek, which has produced \$800,000, the South Fork and the North Fork. All these mines are now active. In the last two of the above group the ledges were uncovered while the properties were being operated as drift mines.

FAMOUS ALLEGHANY DISTRICT

Two miles south of Forest lies Alleghany, today the most sensational mining camp in the west. With Forest and Downieville, Alleghany lies on the western quartz belt.

It is impossible to state accurately the amount of gold this camp has produced, and a list of all the producing mines in the district would be long, indeed.

In the heart of the town is the famous Sixteen-to-One Mine, comparatively new, and today the richest mine in the United States. Production figures of this mine have been carefully guarded, but it is known that the yield of the Sixteen-to-One has been in the millions.

Adjoining the Sixteen-to-One is the Tightner, the first Alleghany bonanza.

The Plumbago, east and south of Alleghany, has perhaps produced more gold than any other mine in Sierra County, the estimated figure being \$18,000,000.

Then follow the Oriental, Rainbow, Gold Canyon, Ireland, Docile, Mariposa,

Kenton, El Dorado and the Twenty-One.

Other mines which have produced from \$50,000 to \$75,000 include the Oselo, Morning Glory, Golden King, Spohn, Independent, Ophir and Dreadnaught.

In the early days the gravels near the town and across Kanaka Creek to the south were extensively worked, but now Alleghany's fame lies in her quartz mines, and she is today one of the most important mining camps in the state.

This, briefly, is the past and present history of mining in Sierra County. Her future will be brighter than her past.

MUCH VIRGIN GROUND AVAILABLE

A map of Sierra County's three quartz zones would show these belts but sparsely dotted with mines, leaving great areas as yet unexplored.

The huge concrete restraining-dam in the North Yuba River at Bullards Bar has just been completed. This dam will impound tailings in the North Yuba watershed, and a resumption of hydraulic mining in Sierra County is imminent. The old hydraulics at Scales and Indian Hill and the Pride mine near Sierra City have been revived and are ready for the water. The heavy cost entailed in refitting these old mines, the miles of new ditches, and the purchase and installation of new pipe, giants and other expensive equipment are evidence of the faith of the operators in the gravels of Sierra County.

Sierra County, with a total production of \$206,500,000, has never yielded her position as the second highest producer in California. Here was opportunity for the forty-niner, for the miner of the eighties, and here is opportunity for the operator of today.

Delegates to the Mining Congress this fall will find in Sierra County the oldest, and at the same time, the newest gold field in the west.

The Timken Roller Bearing Company of Canton, Ohio, announces the following executive changes to be made effective May 1, 1924:

Mr. George C. McMullen, formerly Manager of Sales of the Industrial Bearings Division, becomes District Manager of Sales of the Timken interest on the Pacific Coast, with headquarters at San Francisco, California.

Mr. Harry H. Gildner, formerly in charge of the Chicago office of the Timken Roller Bearing Company, becomes Manager of the Industrial Division, with headquarters at Canton, Ohio.

TWO SLANTS AT THE COAL PROBLEM

The Mine Rating Case Proves But A Continuance Of The War Thought And Is An Effort At Regulation By Conference Ruling—The Worth While Operators Are Fashioning A Program To Fit The Needs Of Today

By GEORGE H. CUSHING

THE Commerce Commission has been holding hearings in an effort to frame rules for the rating of coal mines. It wants to introduce past performance as a factor when determining what rating a mine should have.

In the preliminaries I was in favor of basing mine ratings on past performance. I have, secreted in my inner consciousness, a whole set of such rules which were drawn for this occasion. In the preliminaries I was much disposed to reduce them to black and white. In the preliminaries I stood ready to argue with anyone not only in favor of the principle but even for the rules themselves. After certain principles have been established and under certain conditions, I am convinced that, the commercial basis for rating mines is the only one which is substantial and indeed lawful, under our Constitution. That statement rests on the assumption that the mine rating rules are to be drawn and administered in a lawful and constitutional way; it presupposes that the whole scheme of administration is to be lawful. On that assumption, there is no other way to rate the mines.

That is to say, the Commerce Commission exists solely to regulate interstate commerce and the instrumentalities of carriage. It has no more to say about the coal mines than have I or the man who occasionally washes my automobile. The coal mines are strictly and wholly under the police power of the state; they cannot be reached by the longest arm of the federal government. The Commerce Commission has jurisdiction no nearer the coal mine than the railroad siding. Even on that siding, it has nothing to say, except about the movement of loaded cars—after they start into interstate commerce.

It will be seen at once that if the Commerce Commission is to keep within the commerce law and if it is not to infringe the police powers of the state, it can possibly rate the mine only on the coal which regularly moves off the "load tracks" at the mine. To do otherwise is to infringe the police powers of the state. Therefore, I say that the commercial rating is, alone, lawful or constitutional.

However, the case, which is in progress as this is written, had not been under way more than an hour before I was convinced that this was another venture designed to evade the Constitution and to introduce, by Commission orders, the whole scheme of regulation aimed at in the Frelinghuysen seasonal rate bill. I

know that the Senate debated, but refused to pass, that bill. I know that the House considered, and refused to report, that bill out of committee. It could not be enacted into legislation. Even so, the Commerce Commission is talking about enacting such a law by the mere formality of issuing one of its own orders.

In detail, there is now no car shortage. Therefore, there is no emergency or near emergency which calls upon the Commerce Commission to act. Also, the railroads and the shippers, about a year ago, drafted a new set of mine rating rules. Those rules have never been tested in any car shortage. It is not, therefore, a failure of the present rules which has caused this hearing. Admittedly, all that caused the Commerce Commission to spring into action was one paragraph in the report of the United States Coal Commission. It suggested therein the current proceeding. The Coal Commission, in the main, seems to have been impressed by the desirability of continuing into peace time some of the war machinery. It so advised and the Commerce Commission was following its lead.

Therefore, the idea of rating mines on the commercial basis was not—as I had hoped—a movement to return to a constitutional form of government and to those limitations which due process of law must put upon carriers, operators and Commission. It was, instead, purely an effort to keep alive the war thought and the war machinery. This explains why, in the preliminaries, I favored the commercial basis of mine rating and why, within an hour after the hearing started, I was pawing up the earth in my haste to get under cover.

As the matter now stands, a faction of the Commerce Commission wants to stabilize the coal business. What it means by stabilization is: A purpose to destroy forthwith about 30 percent of the present mines. That, while sinister and amazing, is not the real end; it is but a means to that end. What the Commission is really striving to do is to force into bankruptcy a few of the mines, leaving just enough more so that the people—by patronizing them regularly and by feeling a shortage of coal several times—will come to buy their coal in equal monthly installments. That is, the effort is not to rate the mines only, but to force a change in the buying habits

of the American people. When it is proposed to effect this change by a new method of rating the mines, it takes rather a roundabout road to an interesting goal.

The reason I took so hastily to cover when that sort of a program hove in sight was that it will take something like five or seven years to really bankrupt the so-called unnecessary mines. After that it will take—assuming that the mines remain bankrupt and hence extinct—another fifteen years of regular coal shortage to change the buying habits of the people. Thus, all told, it will take at least twenty and probably twenty-two years to effect the change which the Commerce Commission has in mind. With the personnel of the Commission changing frequently and with the people against any such an artificial program, it is impossible to carry it to completion. It is entirely too chimerical even for a dreamer to espouse. For that reason, I pushed the whole project to one side as being of no practical use or benefit to the coal industry.

The failure of the Commerce Commission to grasp the immediate coal situation or to fashion a workable plan leaves the operators under necessity to work out a program of their own. They are handicapped terribly by the need to fight this and other artificialities which have crept into their business. Still, they must try to devise some sort of a program of their own.

It is not quite true to say that the operators favor any fixed method of procedure. They do not. They are beginning to have, however, a definite goal and will work toward it. This goal fell out so soon as they had arrived, by analysis, at an exact understanding of their real problems. And it seems to have fallen to the lot of Samuel B. Crowell, the president of the retailers' association, to produce the clarifying analysis.

In his speech before the annual convention of the National Coal Association, Mr. Crowell said that in past it was the fixed habit of the coal user to rely upon a retailer and of the retailers to rely upon a certain mine or group of mines. Thus the fixed habit of the industry was to rely on fixed relations extending from the face to the smokestack. These fixed relations—according to Mr. Crowell—were broken up by the war regulations and by governmental experimenting which has since been done. By these interferences the producers and the con-

sumers have been kept apart. Thus the producer has lost his regular markets; the consumer has been thrown out of gear with his familiar source of supply. This has brought, to producer and consumer alike, decided uncertainty. And the uncertainty has caused all of the unrest. It has, indeed, created the "coal problem."

Having analyzed to find the cause, Mr. Crowell used a synthetic process to find the cure. He advised the operators and retailers to make their campaigns to restore, by some process, those fixed relations between producer and consumer. In brief, Mr. Crowell suggested that the whole of the problem is soluble by a merchandising program which tries to restore friendly relations between these important groups. The operators are already seizing upon this big idea and are planning to put it into effect.

And the curious part of the whole matter is that—away down at their roots—the two programs are identical. The program of the Commerce Commission rests upon the ability to sell. The program of Mr. Crowell rests upon the ability to sell. The seed and root of the two programs is the same. But, after starting with that strange similarity, these two projects take different paths and never touch again. The Commerce Commission project is an onion—roots as fine as thread; a bulb which lies so close to the surface it will be washed out by the first hard rain; and a lot of useless green stuff above ground. The Crowell plan is alfalfa—roots which sturdily penetrate far into the ground and a modest above-ground growth which is extremely nutritious. The Commerce Commission project uses merchandising to introduce artificial governmental control which soon strangles the commercial spirit. The Crowell plan contemplates that the government shall continue to have little or nothing to do with the business but that the operators shall, by appealing to the trade and by struggling to hold its confidence, work out a satisfactory development.

The essence of the history of governmental regulation has been: During the war the Fuel Administration wanted to disregard production, admit that the supply was inadequate, and artificially control prices and distribution to modify the obvious defect. The result of the program was a price which invited into the industry the new mines that, today, are admittedly too numerous. With the superabundance of mines a fact and with full knowledge that they resulted from an artificial device introduced by regulation, another governmental agency wants to kill off the excess mines to such an extent as will reintroduce an artificial shortage of such proportions that the people will, perforce, reform their buying habits.

The essence of the operators' program has been and is: During the war they wanted more transportation that they might increase the supply of coal, to the end that prices would take care of them-

selves. Having today too many mines and an abundance of transportation, they want to be left alone until, by the natural process, production again comes fairly close down to what is the real demand.

COAL REGULATION DEMAND SUBSIDIES

"I DO not believe there is any sentiment for government regulation of the bituminous coal industry."

The foregoing statement was delivered by Secretary of Commerce Hoover at the annual convention of the United States Chamber of Commerce at Cleveland early in May. Mr. Hoover's conclusion was based on the fact that through voluntary cooperation of both operators and miners the bituminous industry was gradually working out its problems and establishing itself on a basis of sound stability. In making his declaration, Secretary Hoover was not unmindful of the fact that there are pending in Congress several coal regulatory measures, which he mentioned in his address. These, however, he inferred were unnecessary, as the coal industry appears to be solving its own problems without the necessity of governmental interference. Secretary Hoover discussed the coal situation after he had referred to standardization in the lumber industry. Mr. Hoover's remarks on coal were as follows:

"I mention one other case of a most vitally important order, rendered possible only through associational activity in which the department has been in active cooperation. That is in the bituminous coal industry. There have been developed in this industry 30 percent too many mines operating intermittently during nearly every week of the year with a large seasonal dip in summer. They required 30 percent more labor and 30 percent more capital than was necessary to produce the nation's coal. One effect of this situation was that some proportion of the employees secured too few days' work to yield them a reasonable standard of living, even at the apparently high daily wage. This minority of employees was naturally a constant source of agitation and disturbance. The result of all this was a higher cost of producing coal and consequently a higher national coal bill; speculation and uncertainty to the operators; hardship, difficulty and instability to a considerable portion of the workers. The fundamental cause was a vicious cycle of seasonal fluctuation in demand, annual shortages in coal cars, and periodic strikes which grew out of the instability of labor relationships. These periods of shortened or suspended production always resulted in famine prices for coal and great stimulation to the opening of new mines.

"At least four government commis-

sions examined this question. Probably forty bills have been introduced in Congress proposing governmental regulation in an attempt to correct the abuses and wastes and public danger that lay in the situation.

"The associational agencies in the field were those of the operators, labor, railway executives and various associations of industries as consumers. The first problem was to secure a general knowledge of the causes. Remedy was undertaken in many directions. The railway association provided a more ample supply of coal cars and greater expedition and interchange in their handling between different railways. The department, in cooperation with chambers of commerce, manufacturers' associations, and railway and public utilities associations, urged that more coal be put in storage during the summer. The result was that last year for the first time in many years we had no interruption in the distribution of coal due to car shortage. One element of the vicious cycle in this situation is eliminated, provided we can continue this same cooperation in the future.

"The second part of the solution was agreement by operators and labor that stability could not be restored in the industry unless there was a long period of continuous operation in which the absence of coal famines and profiteering would eliminate the speculative and high cost producer and reduce the units in the industry and thus its intermittency. The labor agreement between these associations made last February for a term of three years has assured this improvement.

"Here we have an example of the most profound national importance in at least the beginning of stabilization of an industry involved in a most vicious cycle of waste and trouble. The national savings can be measured in hundreds of millions and the human hardships greatly lessened. There will be some preliminary hardship in so great a self-imposed surgical operation, but I am confident it will heal to the mutual interest of the operators, the public, and the workers. *Today I do not believe there is any sentiment for government regulation of the bituminous coal industry.*"

America is guilty of wasting from \$2,000,000,000 to \$4,000,000,000 annually, by burning raw coal in its many scattered little furnaces.

PROBLEMS OF MINE ELECTRICAL MEN

Relation Of Electrical Equipment To Mine Disasters Feature Of Discussion—Large Savings Advocated Through Better Voltage Regulation—Standardization Urged—Storage Batteries And Mine Disasters—Advantages Of Multiple-speed Fan Motors—Testing Of Equipment

THE relation of the operation of fans in mines to mine disasters was one of the important matters discussed at the meeting of the American Mining Congress at Cincinnati of operators and electrical engineers in their consideration of problems of electricity in mines. The matter of fans was one of six important electrical problems taken up. It was brought out that several mine disasters have been caused by the operation of fans at reduced speed. The theme of the discussion was that fans should be operated to make the mines more safe rather than in the interest of economy of operation, as it was pointed out that a saving might mean a sacrifice of life.

Graham Bright presided over the sessions at which electrical problems in mines were debated. It was the consensus of opinion of those participating in the discussions that much real benefit had resulted, and particular gratification was expressed over the fact that there was no formal program of prepared addresses but an open discussion which tended to bring out all points on which information was desired.

STORAGE BATTERIES

R. L. Kingsland, superintendent of the Power and Mechanical Department of the Consolidation Coal Co., led the discussion on storage batteries on cutting machines and main-line locomotives. These machines are designed for use in gaseous mines and are intended to replace the use of compressed air machines. These machines are capable of cutting from 20 to 24 places in 8 hours more cheaply than with other machines. Power consumed by locomotives is less than the power now used for cutting coal. The question was raised as to the possibility of mine disasters resulting from the use of the storage battery locomotive, but Mr. Kingsland stated that the batteries can stand considerable damage without serious injury and that no fire has resulted from wreck of a battery locomotive. While its operation creates a hazard, it is not equal to the hazard resulting from the operation of a trolley locomotive. Mr. Bright observed that it is not possible to produce equipment of this nature which may be hazard-proof. One factor operating against a wreck of a storage battery locomotive is that it does not travel as fast as a trolley. Mr.

Kingsland explained how his company is handling the problem as follows:

"It is the intention to discuss the standard cutting machines and main-line gathering locomotives receiving their power entirely from storage batteries. These machines are designed for use in gaseous mines. In mines where it has been considered advisable to use safety lamps, the power has been compressed air. We have changed from this by using the storage batteries as a source of power instead of the compressed air. The first problem that comes up is the



question of voltage. We have attempted to standardize our voltage for cutting machines. The 220 to 250 volts is the same for main-line haulage locomotives so as to be able to use standard motors. This also makes it convenient for charging batteries because they can be charged from the standard storage service that is in many mines. For the past year one of our mining machines has been operated by power furnished by battery truck containing 117 lead cells, storing 80 kilowatt hours of energy. The battery truck has no extra power for haulage purposes. It is designed to prevent using as a haulage motor. A 30-horsepower double reduction gear is used. Power consumed on the machines averages between 0.2 and 0.25 of kilowatt hour of coal undercut in the Pittsburg seam. We believe that we can cut from 20 to 24 places in 8 hours, cheaper with this machine. In turning to the main-line haulage locomotive we have had one in operation for three months. This machine is provided with two batteries with the idea of operating to full capacity for full 8 hours' shift, using one battery for the first 4 hours and during the noon hour changing battery and using the second battery

for the second 4 hours. This is necessary in order to get sufficient energy for main-line haulage. The locomotive weighing 6 tons, each battery containing 117 lead cells hauls 108 kilowatt hours. It delivers current in 225 volts average. Arrangement is made for removal of battery and repairing at noon time. This gives a total of 200 kilowatts for each shift of locomotive. It is equipped with two 250-volt motors. The average length of a round trip is 8,400 feet, and there are 16 mine cars hauling 2 to 2½ tons each. The power consumed so far shows less than power for cutting coal per ton. To date only one battery has been used for complete shift. We expect to have to use the second battery in order to complete a shift in the near future, however. One peculiarity of the main-line haulage is that the longer the haul the more battery capacity you need for the day's work. If you assume a definite lay-over at the side track and bottom per trip, the longer the haul, the fewer the trips and lesser the lay-over time. It makes quite a problem to get a battery big enough to take in a haul two or three miles long. Up to two-mile haul, it is entirely practical to get two batteries which will do all the work of which the locomotive is capable."

The cost of the battery was raised by C. L. Harrod, electrical engineer of the Indiana Coal Operators' Power Association, who said the trolley type car was one cent per ton cheaper in operation. Mr. Kingsland thought the storage battery type would give a better load factor and decrease power costs. Suggestion was advanced that more attention be paid to the method of charging the battery, because efficient charging equipment and methods would result in saving on investment. It was stated that one company had invested \$25,000 in charging equipment and expected that savings therefrom would pay for the expense within a year. Under the old manual control, there is a possibility of overcharging the battery and paying for more current than needed. It is now possible, on account of improved charging methods, to install proper equipment which will supply current required by the battery automatically. Mine operators were advised to look into the question of charging equipment and methods when their power costs become high.

ADVANTAGE MULTIPLE-SPEED FAN MOTORS

A. B. Kiser, electrical engineer of the Pittsburgh Coal Company, opened discussion on the advantages of multiple-speed fan motors. The question was raised whether it is desirable to have a variable-speed fan or fans operating at low speeds during idle periods in mines. Mr. Lester said that if the speed of the fan is reduced, the fire risk is curtailed. There are, however, advantages in variable-speed fans. J. H. Edwards, electrical engineer of the Elkhorn Piney Coal Mining Company raised the question as to whether the fan should be slowed down during the night. It was developed by Mr. Bright that operation of fans at full speed tends to dry out the mine and produce dust, and he advocated slowing down their speed. J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corporation, favored two or more speeds on fans. The operation of fans for various purposes was pointed out by Mr. Mitchell, who stated that in the case of gaseous mines it is necessary that the mine be well ventilated, and that to slow down the fan will not provide sufficient air to dilute the gases or provide proper ventilation. He thought the fan to be only necessary in gaseous mines. "Is the purpose of the fan to make the mine safe or to furnish air to the miner?" he asked. Mr. Bright said the object should be to make the mine safe.

It was stated that several disasters have been caused by operation of fans at reduced speed. One speaker said that gaseous mines in Pennsylvania and West Virginia should have the same volume of air when in partial operation as in full operation. Mr. Harrod stated that air requirements in Indiana are based on the gas contents of mines, more air being required when the men are in the mines. "At no time is it possible to cut down the air to the limits of safety," he said.

Mr. Kiser further explained the advantages of multiple-speed fans as follows:

"My fans are operated by a variable-speed motor that accomplishes the following results:

"It limits the speed of the fan to secure the amount of air necessary when in full operation.

"It reduces the speed of fan during the night or idle days or during slack operation. It allows increases in the volume of air above that required for usual conditions. It gives very material reduction in speed of fan in case of fire; to accommodate conditions which may arise in the rearrangement of ventilation.

"Such installation gives you all the advantages of steam-driven units. The saving effected by use of variable-speed fans can be best illustrated by several examples.

"Let us assume 300 mine working days

in a year. Assume also the conditions in the mine permit the speed of fan to be reduced between 4 p. m. and 2 a. m. when the fire boss enters for examination. Fan will operate for 10 hours at reduced speed, or 3,060 hours during the year. Fifty-nine days represent Sundays and holidays, or 1,416 hours at reduced speed. Three thousand and sixty hours plus 1,416 represents 4,476 at which fans run at reduced speed. Take a 6x3-foot fan with a production of 700,000 cubic feet of air at 305 R. P. M. and 31-inch water gage requiring 51 K. W. at the fan. A reduction of 209 R. P. M. in the volume of air requires 26 K. W. of reduction in energy of 25 K. W. hours. This saving effected for 4,476 hours represents



11,047 of K. W. hours. Assume at the cost of 1 cent per K. W. hour and you get \$1,104.70 per year.

"Or take a larger fan, one that is 16x6 feet. Such a fan will produce 500,000 at 5-inch water gage of 137 revolutions and requires 525 H. P. A 10 percent reduction in the speed of your fan will result in a saving of 102 K. W. hours during the slack period. A saving of 456,552 K. W. hours at 1 cent per hour represents \$4,565.52.

"There are many mines where conditions permit the disc fan at low water gage. Assume an 8-foot fan will produce 1-inch water gage, 353 revolutions per minute and require 32 H. P. The volume of air is reduced one-half, or 50,000 cubic feet, where such fans can be used. Such a variation represents a saving of 21 K. W. hours. Having assumed 4,476 hours, this will save 93,996 K. W. hours, and at 1 cent this will represent \$939.96 per year.

"During 1923 mines have lost considerable time. This mine was fitted with variable-speed motor for the operation of fan. The fan, when operated on high-speed, required 65 K. W. This represented 569,400 K. W. hours per year. In totaling complete power used it was 262,856 K. W. hours. This represented a saving of 306,544 K. W. hours, or \$3,065.44.

"Another mine has fan running at high speed, requiring 118 K. W. operated at

128 R. P. M. For year it would require 1,033,680 K. W. hours. The power was 785,720 K. W. which represented a saving of 247,960 K. W. hours. At 1 cent this would represent \$2,479.60. This fan has been idle since the first of the year. After operating it 118 K. W. hours for three months, however, this represented 25,488 K. W. hours. Annually this would be 165,340 K. W. hours and would represent a saving of 89,000 K. W. hours, or \$889.40. To all appearances this particular mine will remain idle the balance of the year. The saving will represent \$3,569.60.

"Another mine reduces the amount of air to 175,000 cubic feet by operating fan at 130 revolutions instead of 154 during the idle periods. The difference in horsepower required is 39 K. W. For period of 6 hours during each 24 there is represented 234 K. W. hours, or saving of \$2.34 a day or \$98.10 per month. Our company has at the present time 70 fans in various operations. Sixty-five are electric driven and 59 are equipped with variable-speed motors and 5 by steam engine. We have in the neighborhood of 10 at 250 H. P., 6 at 150, the balance being divided at 75, 40 and 20."

POWER SAVING BY BETTER VOLTAGE REGULATIONS

Savings in power and maintenance by better voltage regulation was the next subject considered, Carl Lee, electrical engineer of the Peabody Coal Company, conducting the debate. It was stated by Mr. Lee that the cost of power and maintenance of electrical equipment in mines is not a very large factor in cents per ton, but that when the mining rate is fixed by a three-year contract, as at present, no reduction can be made on that item below the contract figure. He estimated that the mining rate is 50 percent of the mining cost and that operators in seeking improvements in the interest of economy must look to those items where the cost is variable. "The use of electricity in coal mines is increasing at a very high rate," said Mr. Lee. He stated that accurate figures are not available as to electrical power consumption in mines but estimated that it would run 0.40 of a K. W. H. per ton. He said that in a large majority of coal mines the wiring is smaller than necessary to give a minimum total cost. He gave three principal losses as follows:

Loss due to drop in voltage, which is a direct power loss in wires and motors.

Loss due to armature, field and rheostat burnouts caused by low voltage and consequent repair cost.

Loss of production affecting investment in electrical equipment and all other parts of the mine, which is probably the greater loss of all.

Mr. Lee stated that these losses are a direct result of insufficient copper or its

equivalent to carry the power between generators and motors. He stated that the problem is to calculate the size of copper necessary and to make proper tests to check such calculations for new mines or old mines where the circuits are already installed. "We should try to formulate general rules by which electricians at coal mines can check the wiring and arrive at consistent results."

Mr. Lee further stated that:

"The amount of power used is not definitely known. There is seldom an electrical meter on your electrical lines. Some mines having purchased power measure their energy and know what it costs them. Few mines watch their coal so they know what it costs them, and they have no accurate way of determining costs. Therefore, we don't know what the cost is on the amount of power used. I have a few figures which might be interesting.

"Assume about 250,000,000 tons per year are cut by mining machines at 0.4 per ton of kilowatt hour on the average. That represents 100,000,000 kilowatt hours. On gathering locomotives possibly there is 100,000,000 tons; with the storage battery type of locomotive there we may assume kilowatt hours. Gathering locomotives are most common and possibly 400,000,000 tons are hauled by them. That would, at the rate of 0.2 of kilowatt hour per ton, give you 80,000,000. Two hundred million kilowatt hours are used for service inside the mines, exclusive of pumps and stationary machinery. Assume 2 cents per kilowatt hour for that power (and this is low). This would represent \$400,000,000 for power inside the mine. Common estimates are on 10 percent voltage lost from the generators to the power-consuming motors. I think this is low, but assume that would be \$400,000 loss in power. That, however, is probably the smallest part of the loss. There are three principal losses due to lost voltage, which are: Power loss, repair loss on electrical parts, and this is possibly greater than power loss; and, third, there is loss of production which is probably greater than the former two added together. When you reach a point where your mining machines perform the service they are designed for, or take care of duty intended, this last loss is far greater than the other two combined. Offsetting these losses is the cost of copper required. That limits the amount of copper that can be put in, and they have to be balanced one against the other. There are certain rules we go by in figuring losses. The amount of copper necessary for one individual motor would probably not do for another, however. You men at the face know that you may find a mining machine not running. They do not all run at the same time. They will be waiting, and this is true of

gathering machines. We know that the majority of feedlines are too small."

ECONOMY AND EQUIPMENT STANDARDIZATION

Presenting the question of economy of equipment standardization, J. H. Edwards, electrical engineer of the Elkhorn Piney Coal Mining Company, said that standardization "must not stand in the way of progress." When present types of machinery prove unsatisfactory for changed or increased duties, or are



inefficient, the operator must seek improved equipment, which gives the manufacturer an incentive to develop new designs, which will have a ready sale regardless of the former standard. He advocated standardization of equipment and methods within individual operating companies. He referred to many cases where economical operation had been prevented by lack of standardization of equipment. He stressed the importance of having in a single mine, in a division, or in a large group of mines, as few types and sizes of equipment as is consistent with economical operation. He referred to the case of a company operating six properties which concentrated on standardization and gave the following illustration of how the plan worked out:

"By transfers from one property to another, by selling, and in a few instances by scrapping, this company eliminated nine types of mining machines and seven types of locomotives. This does not mean getting rid of each type, but rather eliminating from mines where a certain type was not well suited, or where there were only a few of a type or size in use. This, of course, made possible the elimination of 16 sets of spare parts. The total standardization of all equipment, including the above-mentioned mining machines and locomotives resulted in a reduction of over \$45,000 in value of spare parts carried in stock. Very few parts had to be scrapped, most of the reduction was effected by transferring parts to other properties. The above figure denotes only the most tangible saving effected

by standardization. It represents only a minor part of the total actual yearly saving in operating expenses.

"Figures indicating the amount of spare parts per ton of coal mined are often an indication of the degree of equipment standardization. For the group of six mining operations mentioned above the actual figures will be given. These were obtained by dividing the total value of the stock of spare and repair parts by the maximum daily tonnage.

	Before Standardization	After Standardization
Operation No. 1..	\$25.00	\$14.57
Operation No. 2..	27.20	9.52
Operation No. 3..	27.80	10.72
Operation No. 4..	22.00	8.34
Operation No. 5..	25.10	8.34
Operation No. 6..	6.42	7.58

"It is concluded from this that figures of \$5 to \$10 are to be expected, depending, of course, on the specific conditions. Operators would do well to check up this phase. No doubt many who do will find a clue to a possible means of reducing their operating expense.

"Standardization of methods should not be overlooked. The electrical men connected with coal mining are liable to conclude that standardization is limited to equipment only. Standard methods of installation, periodic inspection, and of repair and part renewal go hand in hand with standardization of equipment toward the one and only good, 'lower cost per ton.'"

O. S. Newton, general manager of the Sunday Creek Coal Co., said they had found it possible to reduce the expense of repairing parts through standardization. Several years ago the company had five or six types of mining machines and locomotives with \$250,000 invested in extra parts. By standardization of machines the investment on account of supply parts has been reduced to \$50,000, and there is still available parts for every machine and locomotive. It was pointed out that the expense of carrying a great number of parts is prohibitive and that standardization cuts down the supply stock where there are mines of the same type, and enables employees to become experts on the machines.

INSPECTION OF ELECTRICAL EQUIPMENT

Inspection of electrical equipment was next considered. C. L. Harrod, electrical engineer of the Indiana Coal Operators' Power Association, opened the discussion with an address in which he stated that the cost of mining coal can be reduced by a survey with the following purposes in view:

Improving power supply by bettering distribution; eliminating unnecessary power losses; reducing maximum demand and raising power factor; reduction in time lost and repair costs due to breakdowns and failure of power supply; and

eliminating inefficient equipment. The Indiana Association has for three years attempted to make electrical inspections along systematic lines, and supplies a printed inspection sheet to be filled by the inspector, which is filed with the association and the mine superintendent.

The form adopted by this association divides inspection of electrical equipment into two parts—routine and testing. These are covered in the following manner:

Lightning arrestors—Are they intact and properly grounded?

Is there any foreign or inflammable matter stored near switchboard or other electrical apparatus?

Protective signs around high voltage mains—Are they in place?

Exposed wiring—Does it conform to insurance regulations?

Convertive equipment (note vibration of frame, sparking at collector rings, sparking at commutator)—Is copper dust accumulating on collector rings? If D. C. circuit breaker is not higher than rated capacity of machine, determine, if possible, how often breaker opens?

Give R. P. M. of fan. If two-speed motor, are both speeds used? If variable speed, on what controller point is fan normally operated? Do grids heat on higher than normal speed?

Metering equipment—Does demand chart ink properly?

Does demand chart indicator return to correct zero at end of fifteen minutes?

Does watt-hour meter creep?

Is D. C. voltmeter correct at 250 volts? If not, give error.

Has any work been done on metering equipment by power company employees during last month?

Electric hoist—Selling of safety stop.

Strop motors; tippie motors; car pull; miscellaneous equipment above ground; condition of feeder coils in shaft; condition and setting of main underground circuit breakers; report of repairs to haulage motors; report of repairs to machines; ground test of system; voltage test at fan during operation; bonds.

Mr. Bright stated that steel mills are spending twice as much on inspection as on repairs, in an effort to improve continuity of operation.

TESTING OF ELECTRICAL EQUIPMENT

J. F. MacWilliams, electrical engineer of the Pennsylvania Coal & Coke Corporation, led the discussion on the testing of electrical equipment. He stated that for hoisting, pumping, ventilation, cutting and locomotive haulage the most suitable apparatus should be obtained and used in the most efficient manner, which can only be done by careful test and exact records of operation. Care should be taken to see that electric motors are receiving the voltage for which they are designed. If pressure is

deficient the mine is losing not only the cost of power necessary to overcome excessive resistance but is suffering a greater loss in the cost of labor in operation of a machine which cannot perform required work, to say nothing of loss in cost of maintenance.

Mr. MacWilliams advocated the following tests, which are now used at his property. In part, he said:

"We have at each important mine Bristol graphic recording voltmeters which are moved around to the different distribution centers, thus keeping a constant check on these conditions. If low voltage is found at any center, inspection is made, and if the trouble is not at once sighted, tests are made of the feeder and bonds, the man making the test repairing deficiencies and testing after repairing. Once a year a general test is made of all feeders and returns by connecting overhead and return solidly together at distribution centers and applying sufficient voltage at the substation to produce the average current required at these centers, thus obtaining the average loss.

"We have found that while the Bristol meter may not be as accurate as others, still it will give the variation in voltage and is the most rugged instrument we have tried out for this work.

"Pumping and ventilating require a very great amount of power, and if careful check is not made, as low as 30 percent efficiencies are common and may be allowed to continue.

"Pressure and vacuum gages give very good indications of the performance of centrifugal pumps, and at least an ammeter should be installed in the motor circuit of both fan and pump motors. Upon a pump or fan showing any variation from the ordinary, test should be made to determine the cause.

"A careful test of any important pump should be made immediately after its installation. Power input to the motor, together with flow meter or weir readings of the discharge, as well as pressure readings being taken in case of pumps.

"With fans, tests as to conditions with fan not running, by corrected anemometer or pitot tube, water gage and temperature readings should be taken, followed by similar readings with the fan running and including check on speed.

"We make a practice of dividing the section of the airway where anemometer or pitot tube readings are taken into not less than 12 parts and use a water gage arranged for various angles of inclination to give accuracy in readings.

"We have for the testing of locomotive and effort required for haulage of cars equipped with different bearings, oil dynamometers, and in making test of bearings a full trip is hauled over a heading having markers established to indicate changes in grade and distance. Draw bar pull times miles per hour is

checked against K. W. input. The weight of the trip is carefully taken and the observation car with contents run over the haul at the same speed as the trip, to be able to deduct the power required by the locomotive and observation car.

"It would probably be astonishing if the number of defective series fields in service were known. We have found when we first started our present method of testing these fields as high as 23 out of 32 tested defective. As we have found many new series fields defective, our rule is, test all new fields before installing and in every case where an armature is burned out from overload the fields are removed and tested.

"Series fields being of such low resistance, it is a very difficult matter to test these fields by resistance measurements, as 10 degrees in temperature will have in many cases more effect than one or more short-circuited turns, in fact, we have found fields defective after being tested by the resistance method in very fine laboratories.

"We believe the only way to test these fields around the mines is by a special transformer similar to one which we have designed and had built by the Flood City Manufacturing Company, of Johnstown, Pa., who are also building a bond tester which we have developed.

"At our repair shops we try to test all repaired apparatus thoroughly before returning to the mines; short circuit, reverse connection, ground tests are made and load tests by the pump back method made when possible.

"As we have increased our testing department we have reduced our maintenance department which to us is conclusive proof of the wisdom of such course.

"I wish to bring before you another matter of importance. We have become convinced that protection of motors by overload trips on fuses is unsatisfactory, as they cannot give sufficient range in time, whereas, if we could procure perfect thermal protection, we could take care of the motor under any conditions. We have tested out several such devices and have obtained excellent results from thermal relays for bearing protection, but have been disappointed in relays for protection of the coils of A. C. motors.

"We have up with the Westinghouse Company the matter of completing such a thermal device and hope to be able to have one for test in a short time. This device will be on the principle of the Wheatstone Bridge, the galvanometer being replaced by the trip element, a relay which they already build, and two of the arms being made in a rope placed around the coils. As they already have the trip relay on the market, it would appear that the completion of the device for our purpose would be a simple matter."

MECHANICAL LOADING—ADVANTAGES AND DISADVANTAGES

Rapid Advancement Seen In Mechanical Loading—Two Hundred Fifty Machines In Use In Coal Industry—Subject Discussed By Practical Operating Officials—Careful Analysis Of Individual Mine Conditions Urged, Before Installation Of Mechanical Loaders

CORRELATION of mechanical loading with haulage and mining systems was the subject for discussion at two sessions of the meeting of the American Mining Congress at Cincinnati, Ohio, during the week of May 12. The discussion brought out the fact that the advancement in mechanical coal loading has been very rapid during the last few years. It was pointed out that although there have been possibly twenty different kinds of loaders used at one time or another there are at the present time only three in use on a commercial scale. It was estimated that there are approximately two hundred and fifty of these machines in actual use in the coal industry. Practically no records have been kept as to the saving through the use of mechanical loading, but one operator in the West Virginia field estimated his saving by the use of mechanical loading against hand loading to be about 30 cents per ton, based on the 1920 wage scale. The statement was made that there are two hundred Joy loaders in actual operation, forty Myers-Whaley loaders and twenty-three Coloders.

RAPID DEVELOPMENT OF MACHINE LOADING

Howard N. Eavenson, consulting engineer, Pittsburgh, Pa., was chairman of both the Wednesday and Thursday afternoon sessions. In opening the subject, Mr. Eavenson pointed out that within the last year coal loading machines have been pushed in development by a number of people who contemplate the use of loading machines or conveyors to decrease the amount of labor involved in mining. He also stated that the results that have so far been obtained have not been equal to the expectation of the manufacturer or of the companies that have installed them. He believed that this is due to the fact that coal companies have been inactive when they put in machines, as they seemed to feel that the mining machine loading man should develop or put in machines that would step into the coal mines and do the work without any change whatever on the part of the methods and organization in use. He asserted that there is no use in coal companies expecting to get machines

that will go into the mine and operate under usual conditions. Unless the management is willing to adopt a policy in mining that is adapted to the machines and get their organization trained to a point where they will see that the coal is properly undercut for the machines, there can be no success with machines.



D. J. Carroll, chief engineer of the Chicago, Wilmington and Franklin Coal Company, opened the discussion with a review of the progress that has been made in mechanical loading. Mr. Carroll said, "History of importance regarding coal loading machines begins about 1905, when Mr. Hamilton, of Columbus, Ohio, brought out the first elevator conveyor type loader and Mr. Elwood Jones was working on a loader that he is still working on or operating. In 1908, Myers-Whaley brought out their machine and loaded coal very successfully. However, the industry at that time was not ready for loading equipment and, instead of being applied in the mine, met greater success in rock tunnel work. Almost instantly a contractor heard of this machine and observed it operating and decided it was the proper thing for his tunnel work and adapted it to that. Since then many have been used in connection with big tunnel work. In 1912 the Jeffrey people brought out the entry driving machine. This consisted of two or three cutters for breaking down the

coal. The first information that I had of this was in Southern Illinois in the Old Ben No. 9 Mine at West Frankfort. It operated there a month and was not altogether successful owing to mechanical defects.

"In 1918 it was used in Elyria, Ohio, with success. After a year, the operation of the machine was given up on account of trouble they had with the union. Mr. Scholz used the machine later in West Virginia with more success. I don't know the date the Joy machine came out, but in 1920 the company by which I am employed began to be interested in loading equipment, and I was one of three sent to Pittsburgh and West Virginia to learn all about loading machines. We saw the Joy machine at the Pittsburgh Coal Company. We saw it load coal one ton per minute; we then went to the Jeffrey plant at Columbus and saw pit car loaders in use. We went to Ironton, Ohio, hoping to see the Myers-Whaley machine operate. We did not see this, but saw one in a limestone mine loading 300 tons of limestone in eight hours. On our return to Illinois the company tried to purchase one of the Joy machines.

It was the only one we saw loading coal at that time. We had it shipped to us, but the trouble we experienced with labor led us to hold it a year until our new mine came into service. We purchased several more Joys and three Myers-Whaley machines. They have been in operation in our mine loading 1,200 tons of entry work in eight hours. We have no records that are anything of a credit to us in the amount of tonnage produced as yet. We have been unable to work the machines more than 50 percent of the time owing to delays on account of switching and trackage and waiting for shooting. We now have nine Joys and four Myers-Whaley machines. The machines have proven themselves valuable in that they have been able to drive 100 percent more entry work than we could have done with hand loading.

"As far as machines in Illinois are concerned, we have fifteen machines in operation; Indiana has five operators that are using one or two machines apiece. There are a few machines in Western Kentucky. The people that know most about loading equipment are the ones in the nonunion fields of West Virginia and

East Kentucky. We have not accomplished any saving with the machines in the price per ton. We have been able, however, to run our development work to about 100 percent faster than with hand loading."

THE COLODER

W. J. German, of E. I. du Pont de Nemours & Company, called special attention to the Coloder that is put out by the Coloder Manufacturing Company at Columbus. He pointed out that there is only one company using these machines—the Pocahontas Fuel Company—but that they are using twenty-three machines and last year loaded 998,000 tons of coal. He stated that at Big Branch, on the main line of the Norfolk & Western, the Pocahontas Fuel Company have three machines that are loading 1,100 tons of coal each day. They are having less mechanical trouble with loading machines than with main-line and gathering locomotives. The company's statistics show that they have less accidents per 1,000 tons loaded by machines than they had by hand loading. The method of loading is worked in the old room and pillar way—one car at a time—with modification of present method of mining. It is difficult for them to tell just what can be done when the machine is fully perfected.

APPLICATION OF VARIOUS TYPES

Raymond A. Walter, consulting engineer, discussed the problem of the determining factors in application of various types of loaders. Mr. Walter gave as some of the more common influencing factors for the failure of mechanical loading the following list:

Old or new mine.

Floor.

Available capital.

Roof.

Coal seam and structure of coal preparation.

Mining—system.

Laws, surface protection.

Attitude of labor and type, housing and local management.

Mr. Walter asserted that while these were the most obvious factors, there are many more as vitally important. It is his contention that mechanical coal loading can be installed more economically and with less inconvenience at a new than at a going mine. Floor or pavement of a mine is a factor too frequently overlooked, according to Mr. Walter, and it is seldom that sufficiently thorough study is given to roof condition. It is his impression that there are mechanical appliances that can be effectively applied to pitching seams. Seam structure and coal preparation are closely interrelated in so far as they affect mechanical loading. According to Mr. Walter, impurities in the seams either

restrict the choice of loading devices, lower their efficiency, or call for auxiliary cleaning equipment. Some loading devices will not permit of any but the most casual separation of impurities inside the mine. Others permit a better separation than is obtained by hand loading, and in some instances coal and impurities may be loaded together with an appropriate machine loader, the cleaning being accomplished at the tippie, but frequently this cleaning offsets the economies affected by mechanical loading, or the cleaning will be unsatisfactory and the coal prove unmarketable.

PREPARATION OF MECHANICALLY LOADED COAL

Thomas F. Downing, Jr., general manager of the Logan County Coal Corporation, discussed the preparation of mechanically loaded coal. Mr. Downing attributed the failure of many loaders to the enthusiasm of the operating man who frequently grasps at something he needs before considering all the things which go to make for the success for that particular machine. Mr. Downing's statement, in part, is as follows:

"When we speak of preparation we not only mean the taking out of impurities but the relative size of coal we obtain from the machine. You must pick out the machine that will break up the seam the least. A man saving 20 cents in labor in loading must be careful not to lose it by decreasing the percentage of lump and egg in his marketable coal or decrease the relative percentage 10 percent or 15 percent. He is saving at one end and losing at the other. Preparation begins at the face. It begins before the coal is shot down; in fact, it begins with the machine going in previously to cutting it. Many of us have liminated seams and cut in different positions in the seam. We may cut right under the liminated part and pry your liminated loose and then load the top bench. We have to satisfy ourselves whether we can find a loading machine that will load the coal out the way we load it out by hand in order to keep the impurities out. I know of no machine on the market today that will do it. If many mines want to use mechanical loaders they must shoot the whole seam down. When they do that they get into trouble. Pick out four or five working places inside the mine and have them shot the way they are for mechanical loaders and bring it out and run in over tippie and have extra hands there to pick it off and wash it. Then you will be able to tell whether it is practical for you to use the machinery you have in connection with mechanical loading. Your tippie may run intermittently which will give you an output. Let this material go by slow enough for you to get it all out. If you cannot, I have heard it suggested that you break the

coal up into more sizes. I think this is a mistake. One of the curses of the anthracite field is that they have too many sizes. My suggestion is this: If your equipment in your tippie will not handle material which is coming out, I suggest that you give primary attention to that coal where you dump it. Screen your larger sizes from smaller and pick it before it goes into the tippie. That will have advantage particularly to those of you that have hillside mines because it keeps a lot of impurities on the side of the hill where you can dispose of them. It may be that shooting the whole seam and loading and dumping together will give you more refuse in finer sizes. I think that is one of the biggest problems you are going to have to deal with in liminated seams. If that increases the ash in your small sizes, to make it a marketable coal, you must put in an investment running from 10 cents to 30 cents per ton on annual production.

"Let us get away from the thought that we can stick a loading machine in the mine and then go in and watch it work. We must consider how much money we have to spend in addition to the machine to make it work successfully and keep a clean product. Don't think you can get away with mechanical loading without increasing your expenditure. There are a few mines that can put machines in with little extra cost, but the majority of mines cannot. Another thing that you are going to have to spend money on is waste disposal. Personally I know of an expenditure of \$70,000 recently made just to take slate from one place to another. Another point in picking machines is that you have got to consider not only the condition of the seam itself so far as impurities go but the condition of the roof. You have to keep your timber up near the face to keep the dirt out of the coal. You want machine that will take up the least room also. If we are going to do away with labor it takes lots of money to do it. It has been estimated that we can spend \$5,000 a year to do away with one man. We cannot spend this much, but it will take a lot of money and you must have your eyes open. The market today demands and always will demand clean coal. When you are going into a loading proposition, don't be carried away with the thought of quantity, but be sure and keep in mind that if you are going to stay in business the main thing to have is quality."

THE JOY LOADER

One of the main points brought out, following Mr. Downing's talk, was whether loading machines cause greater breakage of coal than hand loading. J. F. Joy, president of the Joy Machine Co., stated, "There are certain districts where the percentage of slack has been in-

creased. This is especially true where it is necessary to do extra hard blasting to permit the use of machines. In other cases, the percentage of lump has been increased. This is particularly true in the Indiana coal fields. Natural conditions in this field are more favorable. There is one loading machine manufacturer who is planning on placing twenty-five loading machines each month in Indiana and Illinois. Based upon our own observation, which is not limited to any small coal producing field, but to the conditions in the coal fields of the entire United States, we believe that mechanical loading will eventually be adopted in every mine where conditions permit its use. The operators using loading machines, who are satisfied with the results they are obtaining, are also satisfied to keep quiet about these results. This accounts for the fact that we hear little to offset the unfavorable things that are said about loading machines. We have about two hundred machines in use. There are several cases where the loaders should not have been installed. This is not due entirely to unfavorable mining conditions. Many times it is due to the lack of thorough study by the fellow under the hill—the man right down at the machine. In many cases there is antagonism that grows up around the machine due to many causes, such as slow delivery of cars to the loader. We feel that there are enough mines favorable to the use of loading machines to produce all the coal this country needs."

Mr. German pointed out that during the time the Pocahontas Fuel Corporation was running run-of-mine coal, the percentage of large sizes decreased. They studied the problem and developed a method of shooting the coal that cut it down to within 2 percent of what the other mines in the same seam were getting in hand loading.

THE MYERS-WHALEY LOADER

William Whaley, of the Myers-Whaley Company, stated that the Myers-Whaley loader has a very smooth motion, picking the coal up at a slow rate and dropping it into a car with about the same amount of drop as a man with a hand shovel. In Mr. Whaley's opinion, it is not necessary to shoot the coal any harder if the shots are blasted with the object of rolling the coal out. He further stated, "The machines will handle pieces as large or larger than two men can lift. So far as the machine is concerned, the big lumps are all right. It is necessary to shake the entire face and to loosen it so that as the machine loads



it the rest of the face will be able to be pulled down without loss of time. This means the coal has to be prepared so that instead of loading out a part of the face and cleaning that out you have to roll out the entire face. I do not believe that machine loading is going to drive the operators that are not using machines out of the market, but I think the whole industry can greatly increase its efficiency. Whether you use machines or hand loading, there is chance for improvement in the efficiency of your men. We are now getting a low efficiency as a whole in the coal mining industry."

A. P. Cameron, general manager of the Westmoreland Coal Company, who has had considerable experience with the various makes of machines, stated that at their property they were using a modified type of the Whaley machine and that they also have some of the Joy machines that are doing excellent work. The conditions entering into the proper preparing of the coal for the machine, Mr. Cameron stated, are so varied that it is a question of suiting your conditions first and getting proper machines for them. There are conditions that no machine will meet, and, as an example, Mr. Cameron pointed out that some fields do not want fine or small coal. He stated that the Westmoreland Company pays the miner for lump coal only, and they have three hundred men in each mine who assist in mining lump coal. They keep their fine coal down to about 3 percent. According to Mr. Cameron's time studies, they find that their loaders operate only about one-third of the time.

RAPID ENTRY DRIVING

Carl Scholz, general manager of the Raleigh-Wyoming Coal Company, opened the subject of mechanical loaders for rapid entry driving. Mr. Scholz, who had made a special study of entry driving, stated, "We have now averaged 1,600 feet in entry driving with two machines working parallel. The situation was not easy and conditions have to be watched closely in selection of equipment. We have been successful with

B34 Jeffrey machine. We have actually accomplished 100 feet in 24 hours by working three shifts. There are two types of entry driving. I know of the McKinlay machine in addition to the ones already mentioned. The disadvantages of entry driving in a type like the Jeffrey is that it is a large machine, and you have to watch that roof is good so you don't have to timber within 40 feet of the face. The advantage of it is that you go 100 feet a day. You have to watch your clean coal and the Jeffrey machine overcomes this. In using explosives it leaves the coal in better shape. Our percentage of lump with the entry driver is five times higher than with the hand. This is one advantage that should not be underestimated. It helps our roof conditions because the elimination of explosives made the roof much more sound. Unfortunately, in one of our mines where we used large machines we had a roof that was not sound, and we had to quit using machines on that account. There is room for considerable improvement for entry driving machines. The cost is another big item with the Jeffrey machine. It is \$25,000 and takes several months to build. This is a big thing when you consider the large amount that goes into the mine besides. In our Glen Rogers mine, on account of gas, we had to take the machines out. We are not operating any machines but Joy loaders."

MAXIMUM TONNAGE AND LOADING MACHINES

Walter M. Dake discussed the question of "How to Secure Maximum Tonnage with Loading Machines," and illustrated his talk with pictures. Mr. Dake stated that the greatest single improvement in modern operative stages of coal mining is the mechanical loader. He summarized the advantages of mechanical loading into ten parts and asserted that labor, averaging approximately 70 percent of total costs, can be reduced to a figure influencing f. o. b. mine costs from 40 to 50 percent. He pointed out the advantages as:

1. Increase of tonnage per man day.
2. Increase of efficiency throughout the entire mining operation by the concentration of working. Large tonnages being produced from all working areas.
3. Increase of speed of cutting machines by systematically arranged cycles of operation.
4. Increase of tonnage per pound of powder used, through the correct placing, drilling and loading of shots by skilled operators detailed for this work.

5. Decrease of haulage costs due to concentration of area to be supplied with transportation facilities.

6. Decrease in amount of timber used on account of the speed of work in any given area, whereby the possibility of falls are lessened.

7. Decrease in cost of ventilation and drainage through reduction in the number of working faces.

8. Decrease in the amount of coal lost in mining through more rapid recovery of deposit.

9. Reduction in general equipment and maintenance costs through larger and steadier tonnage per unit.

10. Reduction in number of accidents due to better supervision of concentrated areas.

Mr. Dake said that there is such a vast disparity in working conditions throughout the producing coal fields that it is impossible to formulate a set of rules to apply to any definite region in any two districts. He stated that approximately 98 percent of the total producing mines used the double entry room and pillar method of mining. Mr. Dake then gave a series of fundamental suggestions for mechanical loading, which may be obtained upon request from the Mining Congress Journal.

ROOM AND PILLAR MINING

David Ingle, president of the Ayrshire Coal Company, led the discussion in connection with room and pillar mining and its relation to the mechanical loading of coal. Mr. Ingle explained the conditions that had to be overcome at their Southern Indiana property. The coal at this mine is about 5 feet in thickness and has a decided rectangular cleavage and is quite open. Frequently in shooting the coal the powder will shoot out and at other times the coal will drop if it is being undercut. This makes it very hard to load. Most of the impurities at this property come from the roof, which is gray shale. In places 6 feet of this shale comes down with the coal, and it is necessary to clean the coal before loading. They also have a good deal of water and this, combined with the soft bottom, is rough for loading machines. In part, Mr. Ingle said, "We started into this mine after having operated it for some time previously, and it was turned on the regular room and pillar system. The cars hold 3,200 pounds after loading by loading machine. We started in with loading machines, putting them into the rooms we had already turned and we are turning rooms on 30-foot centers. We do not leave much pillar, which runs 4 inches to 8 inches thick. We undercut all the coal before we shoot it, and we shoot it usually by drilling three holes in the rooms. We use black powder, although we have done some experimental work with other kinds. We are using mules

to gather the coal and furnish cars to loading machines. We try to have a switch in each working place as near the face of the coal as possible. We try not to allow a working face to get more than 200 yards from the gathering place.

"We have been operating the mine since December, 1922, and since that time there has not been a single car loaded out by hand. We now have seven machines. The 4 B. U. type Joy loader is used. We have kept a record on the machines. Several months ago we began keeping a man with watch, pencil and notebook at the machine with the idea of keeping a record of just exactly what the machine was doing in an 8-hour day. We made an analysis of the 8-hour day on this basis and made 25 different records. We have excluded the part days in trying to get an average and the analysis of the last eight days we have tabulated. The machine was actually loading coal three hours and one minute. Twenty-eight minutes were lost in shifting the loader around to get a better attack on the coal. In moving the loader from one place to another, thirty-three minutes of the day were lost. Sometimes we have to make four or five moves in a day. The time spent in switching cars from the nearest point that the mules bring coal was forty-three minutes. We have twenty-seven minutes down due to delay in bringing cars to the switch.

"We have a good deal of coal that hangs up and we spend 35 minutes in having to stop the loader and the operator breaks down this coal so the operating machine can get to it. We could shoot hard enough to overcome this, but don't like to break it up. Thirty-four minutes are spent in cleaning up the corners of the coal. We clean up with a shovel rather than shift the machine around. With the Joy machine the loading end of the machine is very wide and straight and the corners of the room are square and you cannot pick up all the coal. In order to get all the coal we have to have the machine at right angles to the face and there is little coal left in the corners. Fifty-six minutes a day are taken to oil and tighten up the machine and possibly waiting for some part that is broken. We lost 14 minutes shifting the tracks. Our loading tracks are of 16-pound iron and laid on steel ties. Seven minutes are spent for cars off the track. We have an item of 15 minutes for power loss. There is only two minutes that is due to little falls or droppings of slate that comes down as we start or after starting loading. We have a miscellaneous item of six minutes which are lost. We loaded 48 cars per day with these machines. We have seven of them and average 48 cars per machine per day. The cars hold 3,200 pounds which makes 75 tons per day as the result of our present operations. We

have found so far that while it has taken quite a period of time to keep the loaders in repair the cost of upkeep considering how many there are is for the last four months 7 or 8 cents per ton. This includes the cost of upkeep on cutting machines which is of course only a small part of this. It is costing us 3 cents per ton for explosives. This is all day work and consequently we furnish all explosives and do all the drilling and shooting. It is costing us 3 cents so far for this.

"We are comparing this mine with our own other mines where we have mules and gathering machines. I don't think it costs more to operate these machines than the gathering machines in other mines. We have found in general that we do not have to operate nearly such a big territory as you might expect to get out the same amount of coal. We are using about six loading places for each worker and we really do not need that many. We have seven loaders which would be 42 places, as compared with perhaps 70 places, it would take under our arrangements in Indiana to load coal by hand. We there allot three places per man. This would take about 50 men loading by hand and they would have 75 places, as compared with 42. You can concentrate your work very much with the machines. We have found also in comparing this mine with other hand loading mines the first three months of this year, in the hand loading mines we averaged 5½ tons per day per man for each three months. That may not sound very big to some of you people, but that is what the figures show. That includes every man on the pay roll. With the machines we are averaging 7 tons per day per man for every man. There is a gain of 1½ tons. It is costing us 85 percent in this mine of what it does to produce coal in hand-loading mines."

Mr. Ingle brought out the point that they were using mine cars of a capacity to hold 3,200 pounds.

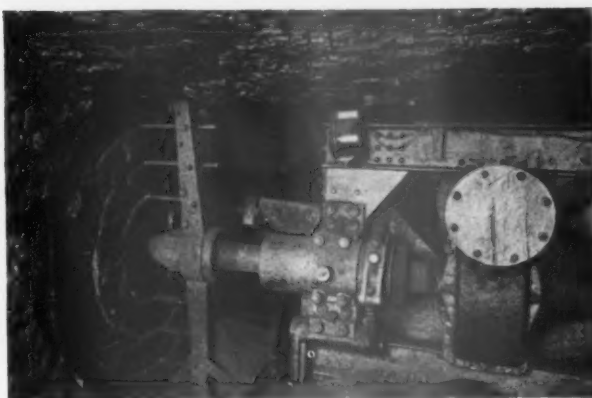
MINE CARS

W. D. Hockensmith, of the Hockensmith Wheel and Mine Car Company, stated that the car builders had been working out some plan whereby they could build cars big enough for mining machines. He asserted that they had two major problems to consider. In part, Mr. Hockensmith said: "We had to make a car of the same capacity as the old car and still allow them to use a loading machine. This meant getting away from the wooden mine car. With the composite car that is being used today we increased the capacity 10 percent. We have designed in the last few years what we call a semi-box type in which the flare is eliminated and the wheel housed partly. This was designed to reduce the over end height from 3 inches to 6 inches.

You can add from 25 to 50 percent to the inside capacity. A car that held 1,600 pounds we have made in the last few years to hold 3,200 pounds. A Pittsburgh seam car built on new type is increased 25 percent. That is a material increase when it comes to machine loading of coal. The machine has developed to such an extent that they want cars that will hold 5 to 7 tons. Consideration of three things, however, is necessary—roof, opening of mine and height of seam. We have been using cars in Pittsburgh that are short cars. In West Virginia they are 10 to 12 feet long. These are working very satisfactorily, but they are not made of wood. A wooden car will not stand that kind of loading but with steel you can produce this car. A car 42 inches in height, 6 to 7 feet wide and 12 feet long, has been produced to carry seven tons of coal. That will involve some extra expense which is being used in the way of starting long trips of this car. Special drafter is going to be used for starting. A car of this size would have to have some form of draft gear. In starting a long haul something like this must be designed. The box type increased capacity from 10 percent to 15 percent more. You can take cars 24 inches to 30 inches off the rail and get from 3 to 5 tons. This means rotary dump entirely. We have designed a number of cars and find this condition exists. A steel car can be built that is lighter for the same amount of capacity. You will gain an advantage in weight in the steel car. Another thing is the life. We have satisfied ourselves that cars built 12 years ago out of Bessemer steel are only now being repaired. With Open-Hearth steel they will give 25 percent longer life. The upkeep is very small on steel cars as far as repairs are concerned."

LONGWALL MINING

R. Dawson Hall, engineering editor of Coal Age, opened the discussion in connection with longwall mining. Mr. Hall stated that he had always been a great advocate of longwall mining in connection with mining machines, because of its advantage in making it possible to cut the long face continuously and load it constantly by a trip of cars passing in front of the face. Consequently there is less loss of time in placing each car in front of the loading machine. He stated, however, that the progress made in conveyors had lessened his belief in the advisability of longwall mining. Mr. Hall described at some length British conditions and their application to the



coal mines in America. He brought up the point of the difficulty arising in moving loading machines from place to place when conveyors are in the way.

Mr. Eavenson pointed out that experiments are now being conducted in the United States that will teach us a great deal about longwall mining.

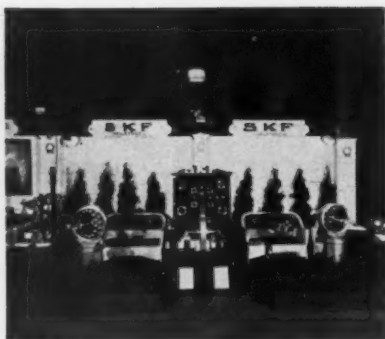
CONVEYOR HAULAGE

J. W. Bishoff, vice-president and general manager of the West Virginia Coal and Coke Company, pointed out that the ideal situation would be where you have a seam of coal and a top that you could work on the longwall system or a long face. While it is true that conveyors are expensive, this is equally true of any type you get. One of the principal drawbacks to any type of loading machine is getting the coal away from it. With a machine adapted to loading on conveyor that difficulty would be eliminated. Mr. Bishoff said his company had conducted some very successful experiments with the modified system of longwall in conjunction with conveyors and the results have been highly satisfactory. Mr. Bishoff stated that at their company they had a seam of total thickness of 6 feet. He stated that there is "possibly 15 to 18" of bottom coal and the shale parting that runs from 4 to 9 inches. The conveyor is extended on the long side of open face. We cut the coal with longwall machine and shoot it down at once. When the men load it the top coal is loaded out before they attempt to handle any of the shale parting and that used to be thrown back over the parting. This takes about two hours. We could not work machines under these conditions in conjunction with conveyors to any advantage using any of the types of machines on the market now. We are not mining any coal at all except by two conveyors. We keep cars at conveyor all the time. The haulage motor can make a trip to the outside and back in time it takes to make a trip with the cars. The cars are never uncoupled and the operator moves the trip as the cars are

loaded. By the time that trip is loaded the motor has gone to the outside and is back again. When we were loading by the old method we cut three tons, now we cut 2½ tons. The men employed now average 10 to 11 tons a day. Under the old method they averaged 5½ to 6 tons. We have about 97 percent recovery. We are driving on a narrow work with conveyor now. As the panel retreats the conveyor is moved. The conveyor is built in sections and easily moved. Regarding depreciation as near as we can tell we have come to the conclusion that the life of the conveyor will be five years."

COMBINED CUTTING AND LOADING MACHINES

Mr. Eavenson called attention to one other adaptation of mining machine in which experiments have been made in a machine designed for both cutting and loading coal on a face 40 feet wide. He called upon W. J. O'Toole, vice-president of the American Coal Cleaning Corporation, to describe the results his company had obtained. Mr. O'Toole stated: "The machine is a cutting and loading machine. It is not yet on the market. The cutter bar on the machine is 50 feet long and cuts the coal without shooting. The coal is conveyed to entry by the mine cars carried by the end of the loader. It is the first machine of its kind. The best performance that we have had on it is for 30 minutes continuous running 55 tons; 8 hours, 320 tons; 24 hours running, 620 tons; 32 hours running 718 tons, and the best month we had is a little less than 7,000 tons. We believe that we have overcome the cutting, loading and hauling problem but we have developed another, which is, taking care of the roof. When you realize what it means to take out coal 6 feet by 45 feet and 87 feet long and how much timber it takes to hold up that much roof you will see we have a problem. We use a hydraulic jack that is spaced about 6 feet apart and in this is a screw 8 feet long that is operated by the mechanism on the machine. These jacks push themselves into the coal. When the machine has run away from the screw there is an arrangement by which we slip the jack back to the screw. The jacks have not solved the roof trouble. The coal falls down on to the conveyor and it takes it to the mine car. This is No. 3 Pocahontas coal. I think this would run on any kind of coal. The cutter bars are under the coal and when the coal falls it hits the conveyor. We have shot but little coal down. The faces are 45 to 48 feet long. It goes into the pillar or solid coal."



NATIONAL EXPOSITION COAL MINING EQUIPMENT

Cincinnati Headquarters For Greatest Coal Mine Equipment Exhibit Ever Staged—One Hundred And Twenty-five Leading Manufacturers Participate—Actual Demonstration Of Labor-Saving Cost-Reducing Equipment—Discussion Of Practical Problems Attended By Largest Gathering Coal Men Ever Assembled

NEVER before in the history of the coal mining industry has there been such a "get-together" as the simultaneous meetings of the National Coal Association and the American Mining Congress at Cincinnati. The coal mine president rubbed elbows with the mine foreman, the mine electrician, the general superintendent and other coal officials in the discussion of the practical problems that affect both the company management and the wages of the employees.

"Lower cost per ton" was the keynote of the National Exposition of Coal Mining Equipment staged at Music Hall, this being the major problem that is confronting thousands of mine operators. The whole discussion was directed toward greater efficiency in production, which will eventually mean lower production costs per ton. The main features of the discussion were the problems of the mine electrical men, the mechanical handling of coal, the new process of cleaning coal by air, better blasting methods and rock dusting to prevent explosions.

A statement was made on the floor of the convention that it has been estimated that to replace one man by mechanical

equipment would cost the company \$5,000. Many splendid ideas for cost reduction were presented and their merits discussed, among these being saving in power in electrical equipment, the loading of coal mechanically and through standardization of surplus equipment and repair parts. It was estimated that the cost of electrical power alone, inside the mine, would represent an expenditure of \$400,000,000. Common estimate indicates a 10 percent voltage loss, which shows a loss of \$400,000 on voltage alone, which is a very small percentage of the total loss through improper handling of electrical equipment. One company showed a saving in the reduction of costs in handling surplus and repair part equipment of from \$25 a ton to \$14.57 and from \$27.50 to \$9.52.

It also was brought out that mechanical loading in certain fields had reduced costs 30 cents per ton. The discussion brought out the general thought of the convention that the salvation of the coal industry rests upon the proper application of mechanical equipment. The interest that was manifested by the entire 3,100 mining men in attendance at the Cincinnati meeting would indicate the

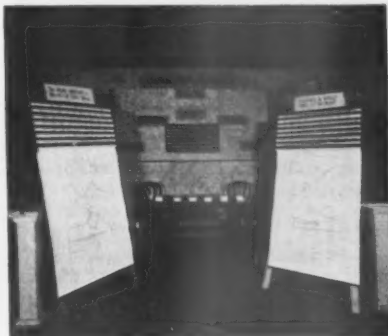
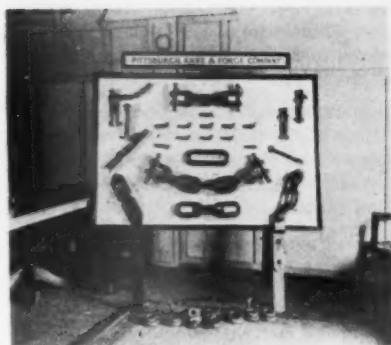
seriousness of their purpose and the ultimate solution of the major problems surrounding the production of coal.

Altogether no more satisfactory meeting of mining men has ever been held. Operators feel that their time was well spent, and the exhibitors expressed themselves as being highly pleased and anxious to repeat the meeting again next year. The vote taken favors Cincinnati as the logical place to hold these "get-together" meetings.

The City of Cincinnati proved a most hospitable host, the entertainment of delegates being particularly delightful. A special vote of thanks was given the Cincinnati committee by the Manufacturers Division of the American Mining Congress.

One of the main features of this exposition was the fact that there were so many actual working models. Mining men in attendance were able to see in practical application the equipment designed to reduce their costs. The center of attraction at the exhibit was possibly the Joy Machine Company and the Myers-Whaley Company exhibits, each of whom showed their coal loader in actual operation. A miniature working model of the McKinlay loader also was





shown. There was an actual demonstration of the possibilities of rock dusting; coal was cleaned both by air and by water; an electric substation demonstrated its "fool-proof" anti-accident qualities; miniature models demonstrated the mechanical preparation of coal; mine doors, full size, were in actual operation; one exhibit showed a complete miniature coal trip; drills loudly proclaimed their penetrating qualities; solicitous representatives carefully and thoroughly explained the particular merit of their equipment; much interest centered in the exhibits pertaining to safety and rescue work—in fact safety features of the equipment were emphasized equally with cost reduction.

The entire exhibit was divided into three main sections; equipment for the saving of life, for the saving of labor and for the saving of material. Those pertaining to the saving of life included the new self-rescuer exhibited by the Mining Safety Device Company of Pittsburgh, the exhibits of the United States Bureau of Mines and others in regard to rock dusting and safety appliances.

It was estimated that the value of the machinery exhibited at Music Hall was somewhere in the neighborhood of \$500,000, which included three mechanical coal loaders, nine manufacturers of track material as well as four battery companies, six pump manufacturers, seven roller bearing concerns, seven different makes of mine cars together with mine locomotives, both underground and for outside work, cages, hoists, blasting supplies, cars and car dumpers, drills,

maps, wire rope, motors, blowers, lubricants, weighing machines, safety appliances, complete coal cleaning and handling equipment, mine doors, electric sub-station, valves, welding equipment, gears, screens and a large number of individual exhibits, explained in the following review:

American Appraisal Company

This exhibit consisted of a display of charts showing this company's methods of valuation.

American Brake Shoe and Foundry Company

Showing brake shoes for mine and industrial locomotives.

American Coal Cleaner Company

This exhibit was in conjunction with Roberts & Schaefer Company, showing the new process of the cleaning of coal by air. A complete working model was exhibited, showing how the coal is cleaned, prepared and distributed according to sizes. This process was thoroughly discussed in the practical discussions of problems of the coal operator.

American Mine Door Company

This exhibit was a working exhibit of an actual size mine door completely demonstrated from every angle.

American Pulverizer Company

Showing the American ring pulverizer and coal crusher, together with a special feature of the A. P. Co. system of rock dusting.

American Steel and Wire Company

(Represented by the exhibit of E. A. Kinsey Co., their jobbers.)

Atlas Powder Company

Showing their dummy samples of their blasting powders, particularly featuring their Coalite "E."

Automatic Reclosing Circuit Breaker Company

Exhibited automatic reclosing circuit breakers for switchboard mounting; enclosed type for sectionalizing distribution system underground; automatic motor starter for mine pumps; battery charging switch for protecting storage batteries on charge; thermal relays; bearing relays; overload relays; and miscellaneous relays.

Bennett and Myers

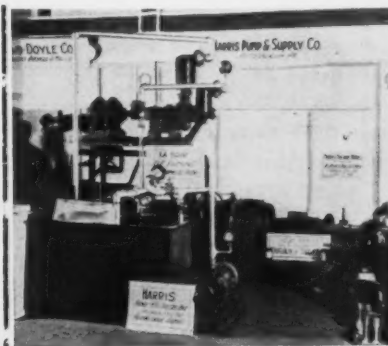
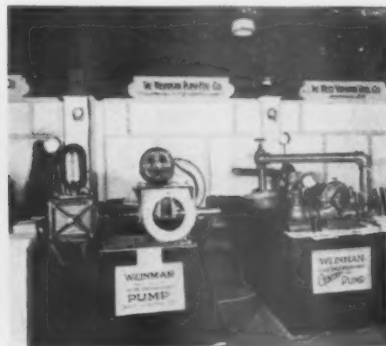
Showing a complete line of wood valves, in which no metal is touched by mine water; particularly adapted to mines when bad water conditions exist.

Bethlehem Steel Company

This exhibit made a special feature of mine ties and particularly emphasized their double fastening which may be installed while rail is intact. They showed their manganese steel frogs and forged steel coupling links. In their exhibit was a pile of steel mine ties, 1,000 in number, showing the advantage in saving storage space by using steel mine ties instead of wood.

Car Dumper and Equipment Company

This exhibit consisted of a working model of the "Solidcar" self-dumping



cage; also skips and skip loading equipment.

Carnegie Steel Company

Showing steel mine timbers; special steel track material; wrought steel wheels and rails; also forged steel self-lubricating mine car wheels.

Central States Publishing Company

Maps of coal mining fields showing every coal mine east of the Mississippi River. This company has produced 3,400 different sets of maps to date. These maps give the names of the mines, operators, equipment, veins of coal, daily loading capacity, etc.

Chance Coal Cleaner

A complete working model of the Chance method of cleaning and separating anthracite coal by water.

Chicago Pneumatic Tool Company

Featuring Little Giant coal drills; two working models with drills in actual operation.

Cincinnati Frog and Switch Company

Featuring their "Trojan" products; cast steel frogs.

Cincinnati Steel Castings Company

Showing castings for mining machines; cutter chains, etc.

Cincinnati Tool Company

This exhibit consisted of electric drills and grinders.

Coppus Engineering Corporation

Showing the VANO blower and auxiliary mine ventilation equipment for special use on entry and tunnel driving. These blowers are driven by compressed air, steam or electricity; are portable, small and light.

Davies Mine Switch Lock Company

The switch lock shown by this company is a special safety appliance especially designed to prevent accidents.

The Deming Company

Showing their acid-resisting mine pump with porcelain cylinders which prevents corroding from acid mine waters.

Diamond Machine Company

Showing the Fort Wayne electric rock drill, for installation on a mine car, in actual operation. Also the portable electric coal drill.

Dravo-Doyle Company

Featuring the Austin mine pump, especially adapted to mines which have difficulty with mine waters. The metal used in this pump is a high-grade lead mixture in a bronze metal. The bronze metal feature is a special product of the Dravo-Doyle Company.

E. I. du Pont de Nemours & Company, Inc.

Showing dummy samples of explosive and blasting supplies; also their VENTUBE equipment for mine ventilation.

Duriron Company

This exhibit comprised acid-proof equipment to combat mine waters.

Duro Metal Products Company

Featuring the Lily hoist controller model "D." The safety feature of this equipment was emphasized. This device protects against overspeeding, stopping cages or skips. One of the features of this controller is that besides protecting against overspeeding and overwinding at both ends of the trip, it also warns the engineer by an electric bell when the full normal speed is exceeded.

Rock Dusting, as discussed at the Cincinnati meeting, will be a feature of the July issue of The Mining Congress Journal. The papers presented and the general discussion of the subject will be carried in full.

Edison Storage Battery Company

This exhibit consisted of a complete line of Edison storage batteries for use in coal mines.

Electrical Railway Equipment Company

This exhibit consisted of large sample board and loose samples of overhead trolley equipment such as mine hangers, trolley clamps, section insulators, frogs, trolley wheels, trolley harps and splicing ears.

Electric Storage Battery Company

This exhibit included a complete line of the battery equipment produced by this company.

Enterprise Wheel and Car Corporation

Featuring their balloon type mine car.

Flexible Steel Lacing Company

This exhibit featured their new H-D Flexco fasteners for heavy conveyor belts.

General Automatic Scale Company

Exhibited the "Weight-o-graph," a scale adapted to the weighing of anything about a mine.

Flood City Manufacturing Company

Showing a miniature model of a mine door in actual operation.

General Electric Company

This exhibit consisted of a complete substation in operation, together with full information concerning all of the equipment of this company applicable to the mining industry.

General Mine Equipment Company

This exhibit consisted of a moving picture film showing the Coleman automatic

revolving car dumper in actual operation. This equipment is especially designed to reduce to a minimum the cost of production.

Goodman Manufacturing Company

Showing a small model of the Goodman's mine locomotive with complete literature concerning Goodman equipment for coal mines.

Harris Pump Company

Showing their LaBour model M-L and M-P-L pump, also the Harris multiport foot and check valve and the Harris bronze wood pipe connectors and the Harris low-down, solid bottom suction strainers.

Heisler Locomotive Works

Showing a small working model of a locomotive for outside hauling and switching; especially adapted for rough track, sharp curve, steep grade, and particularly noted for its pick-up quality.

Hendrick Manufacturing Company

This exhibit consisted of a complete line of Hendrick's screens.

Hercules Powder Company

This booth consisted of a reception booth, together with descriptive literature concerning the explosives produced by this company.

J. R. Hoe & Sons, Inc.

Showing a complete mine car.

Robt. Holmes & Bros., Inc.

Showing a mine cage; the Holmes helical adjustable end loader and the Holmes super-sheaves.

Hyatt Roller Bearing Company

Complete exhibit of Hyatt roller bearings in application to mine equipment.

Insurance Credit System Company

Showing patented metal script through the Osborn machine which is used in handling this script.

Ironton Engine Company

This exhibit consisted of a complete mine locomotive. This locomotive is the lowest mine locomotive made, being 25 inches in height. This locomotive is known as their W-L-F type, has quick three-minute removable box compartment, worm gear type. It is an entirely new model and is designed especially to cut down the maintenance cost.

Jeffrey Manufacturing Company

This exhibit consisted of a reception booth, with a complete series of photographs showing the Jeffrey mine equipment.

Joy Machine Company

Showing in actual operation the Joy coal loader. This machine was exhibited in the tent at the rear of the building

and gave an actual demonstration of the Joy method of handling and loading coal. This company used bituminous coal to demonstrate their loader.

Kanawha Manufacturing Company

Complete model of equipment used to separate and prepare coal after leaving mine mouth until delivered into railroad car. They used in this exhibit lima beans, navy beans and rice to demonstrate the various sizes of coal, the model demonstrating how the equipment separates the various grades.

King Powder Company

Showing complete line of information concerning blasting powders and permissible explosives.

E. A. Kinsey Company

A display of wire rope and other mine supplies.

Lincoln Steel and Forge Company

This exhibit consisted of a complete mine car; self-aligning journal box trucks with actual demonstration as to their working qualities; also an automatic greasing machine for mine cars, in actual operation.

Lorain Steel Company

Their exhibit consisted of a mine car, their latest model, and also a mine car which is a relic of the early days in bituminous coal mining. This latter car is about 75 years old, and approximately 3 feet long, 3 feet wide and 2 feet high. In comparison with their present-day model the advancement in the mine car was effectively brought out.

Lunkenheimer Company

A complete exhibit of Lunkenheimer valves.

McKinlay Mining & Loading Machine Company

Showing a working model of the McKinlay coal loader, especially adapted to entry driving, but also designed for underground work.

Marchant Calculating Company

Showing the Marchant calculator with an electrical device that makes the machine absolutely automatic and absolutely accurate.

Marlin-Rockwell Corporation (Gurney Ball Bearing Company)

Showing a complete line of the Gurney ball bearing equipment.

Mine Safety Appliances Company

The main feature of this exhibit was their new self-rescuer to combat carbon monoxide, easily portable by the miners and furnishing fresh air for one hour. Their regular line of equipment also was shown, including signs, oxygen equipment, etc. They also made a feature of the Edison cap lamp, model E 5½ to 6 candle power. This is an entirely new lamp, its main feature being the strength of the light.

Mining Safety Device Company

Featuring the Nolan automatic caging system for use at shaft bottoms, intermediate landings and tipples with rotary walk-overs and kick-back dumps, and at the head of inclines.

Morrow Manufacturing Company

Complete working model of the Morrow junior standard loading boom and coal handling equipment.

Myers-Whaley Company

Showing a working model full size of the Whaley mechanical coal loader. This machine was exhibited in the tent at the rear of the building and gave an actual demonstration of the handling of coal by the Whaley loader.

Norma Company of America

This exhibit especially featured power through the Hoffman percision roller bearings, standard and sulphur lining type.

Ohio Brass Company

Complete exhibit of the entire line of materials manufactured by this company, featuring their general line of track material.

Oxweld Acetylene Company

Showing a working exhibit, demonstrating welding and cutting by the acetylene process; particularly the cutting of 8-inch cast iron. They also showed 4,000 feet of film, showing the typical application of Oxweld acetylene cutting and welding. This film showed

the cutting up of the scrapped battle ships by this process.

Philadelphia Storage Battery Company

Featuring their "A" battery, diamond grid batteries type D-N-L and R-L for mine locomotives; also showing complete line of all equipment produced by this company.

Pittsburgh Knife & Forge Company

This exhibit consisted of "superior" mining machine bits used by 75 percent of the mines employing chain cutting machines. They also showed their "superior" grade of mine car hitching.

Post-Glover Electric Company

Showing the P-G Homanite steel resistance grid and the W. & W. self-starter for 2 to 30 horsepower, and D. C. motor from 110 to 600 volts.

Power Equipment Company

Featuring Viking coal mine gathering pump.

Rail Welding and Bonding Company

Featuring Una bonds and Una process of welding copper to steel.

Roberts & Schaefer Company

Special line of photographs showing the installation of the Marcus coal tippie and special features of Roberts & Schaefer coal handling equipment.

John R. Roebling's Sons Company

This exhibit consisted entirely of a reception room with complete literature concerning Roebling wire rope.

Rollway Bearing Company

This exhibit consisted of "Rollway" bearings, W. S. type and "Rollway" maximum type bearings.

S. K. F. Industries, Inc.

Featuring bearings, with particular models that brought out the anti-friction qualities of ball bearings.

Sanford-Day Iron Works

This exhibit consisted of a complete working model of a tippie layout, showing slate and coal dumps with a miniature coal trip. They also demonstrated their automatic coupling bottom dump.

Simplex Wire and Cable Company

Showing a complete exhibit of Simplex wire and Simplex cables.



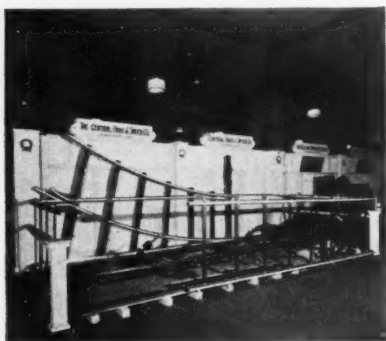
Watt Bulldog Coupler

Southern Wheel Company

Featuring their hollow axle trucks and mine cars with hollow axle; mine car truck with plain, bronze or roller bearing; solid axle mine car trucks with plain, bronze or roller bearing; Hyatt, Timken, etc.; mine car wheels of all kinds.

Streeter-Amet Weighing & Recording Company

Showing their automatic dial and weight recording machine, featuring automatic weight recording as applied to the weighing of miners' coal, ores and



like commodities in pit cars, or in trolley or stationary weigh hoppers, etc.

Strom Ball Bearing Manufacturing Company

One of the features of this exhibit was four panels showing the process of production of Strom roller bearings from the raw material to the finished product. The exhibit consisted of Strom roller bearings and Strom ball bearings for use on mining machines and locomotives. These are particularly used on the Whitcomb locomotive and are especially efficient for mine equipment.

Sullivan Machinery Company

Showing a moving picture of the standard Sullivan equipment for coal mines.

Sweet's Steel Company

This exhibit featured their No. 3 tie adaptable for room work, but also showed a complete line of their mine ties, rails, splice bars and complete track material.

Templeton, Kenly & Company, Ltd.

Showing Simplex jacks, safety automatic raising and lowering. These jacks are all steel and are very light in weight, requiring but one-half man power.

Timken Roller Bearing Company

Showing a complete line of Timken tapered roller bearings.

Tool Steel Gear and Pinion Company

Showing the Cincinnati "Tool Steel" gears and pinions. In this exhibit were four manikins mounted on a revolving platform demonstrating the power of "Tool Steel" gears and pinions. The

most powerful manikin was labeled "Tool Steel Gear," and invariably rang the bell each time his turn came.

Triumph Electric Company

Showing their type T-R motor, self-starting type, remote control especially adaptable to mine fans, pumps and picking tables.

United States Bureau of Mines

This exhibit featured a special crusade against open lights of any kind in mines; also a special demonstration of rock dusting for the prevention of explosions. They showed a complete line of rescue and first-aid equipment and a number of photographs featuring the various safety and first-aid work of the bureau.

Ventilating Service Company

Showing economic automatic mine door, operating equally well on curves, switches and straight lines. This door can be operated by gathering or main-line motors at a speed of 15 miles per hour, against a 2-inch water gage.

Watt Mining Car Wheel Company

At this exhibit was shown the composite mine car of a comparatively recent type, the car floor of which was constructed of oak lumber, the ends and sides of same being constructed of $\frac{1}{4}$ " steel plates, under which car were installed the famous Watt-Hyatt roller-bearing mine car trucks with 14" wheels made of the widely known Watt car wheel mixture of metals used in connection with $2\frac{1}{2}$ " round cold drawn heat treated axles.

The capacity of this car is 100 cubic feet, water level, and the total height of the car above the rail is only $34\frac{1}{2}$ ".

The new Bulldog Automatic Coupler was shown on two model mine cars, which cars were mounted on a miniature mine track, and the inventor of the coupler.

The distinct feature of the Bulldog Automatic Coupler is that this coupler will engage on straight track or on curves and will engage on uneven track where the bumpers are not perfectly aligned, and will couple without the use of a man to couple.

Another special feature was the grease gun.

**Waverly Oil Works Company**

This exhibit consisted of samples of the Waverly oils and greases, motor lubricants, industrial oils, etc., with oils and greases for gas engines, air compressors, turbines, engines, cylinders, steel mills and paper mills.

Weinman Pump Manufacturing Company

Showing a self-oiling mine gathering pump with special features of acid-resisting metal.

Weir Frog Company

Featuring their Titian mine frog.



The exhibit showed two of these frogs, one of which had been in use for fourteen years, the other for ten years.

West Virginia Rail Company

Showing portable mine tracks, steel mine ties, frogs and switches.

UNION CARBIDE CASE DISMISSED

JUDGE MORRIS A. SOPER in the United States District Court of Maryland, has dismissed the suit of the Alexander Milburn Company of Baltimore against the Union Carbide Company.

In December, 1920, the Alexander Milburn Company sued the Union Carbide Company and its associated companies together with the Davic-Bournonville Company, claiming damages amounting to \$2,250,000, charging alleged violations of the Sherman anti-trust act.

After reviewing the testimony the court said:

"The inevitable conclusion from a recital of the testimony is that the plaintiff failed in both branches of the conspiracy charged. The evidence not only failed to establish an agreement between the defendants for the allotment of government business to one defendant and the railroad business to the other party to the conspiracy, but the evidence affirmatively shows that each of the parties to the alleged conspiracy actively and energetically endeavored to secure business in the field forbidden to it under the terms of the alleged combination.

MINE SAFETY MEASURES CONSIDERED

Explosions Arouse Congress

THE alarming frequency and enormity of mine accidents has aroused members of Congress to seek means by which they may be lessened and the toll of life reduced. The last fatality at Benwood, W. Va., has been the vehicle by which steps have been initiated to develop a concrete program of meeting what is regarded as an intolerable situation. Rep. John M. Robsion, of Kentucky, chairman of the House Committee on Mines and Mining, directed the attention of the House and the country to the increasing number of mine accidents in a forceful speech in the House and called his committee together in order to develop through hearings some program of mine safety and accident prevention work. It was developed, and through no discredit to the bureau, that notwithstanding the existence of the Bureau of Mines during the last fourteen years, fatalities in mines have not been reduced.

Among the witnesses was Dr. E. A. Holbrook, dean of the School of Mines of the University of Pittsburgh and formerly assistant director of the Federal Bureau of Mines. Mr. Holbrook presented the situation in the following way:

"The United States Coal Commission in response to a request from the miners organization that they include the subject of mine safety in their investigations, appointed a mine safety committee. This committee was composed of one representative each from the United Mine Workers of America, the Bituminous Operators' Special Committee, the Associated Insurance Companies of Hartford, Conn., the Bureau of Mines, the California State Industrial Accident Commission, the Chief of the Maryland State Bureau of Mines, the Coal Mines Section of the Pennsylvania Compensation Rating and Inspection Bureau, and two consulting mining engineers of general experience.

"After working for over two months this committee submitted two reports, one on Safety in the Anthracite Industry, and one on Safety in the Bituminous Coal Mining Industry. Abstracts of these reports were submitted to the President and Congress by the Coal Commission practically without change. There was almost complete agreement on the fundamentals of mine safety among the divergent interests composing the Mine Safety Committee.

COAL MINE HAZARDS

"The committee undertook to investigate and to answer the following questions:

"What are the principal coal mine hazards?

"What are the methods of accident prevention in mining and the organizations interested?

"What has the Bureau of Mines developed for safety?

"What can the United States Government do to reduce mine accidents?

"What have the states done, and what can they do to reduce mine accidents?

"What aids for mine safety can be brought about through workmen's compensation insurance?

"Can a set of minimum operating safety regulations for coal mining be recommended?

"What more effective means can be had for putting across safety training and education to miners, officials and operators?

"In its answers to the first four of these questions the committee found that:

"The principal bituminous coal mine hazards are falls of roof and coal; underground transportation and explosions. More men are killed from the first cause than from all other underground causes combined. In many districts it is more dangerous to transport coal than to mine it. While mine explosions attract wide

attention owing to the larger number of men involved at one time, the deaths underground from this cause are only 12 percent of the total.

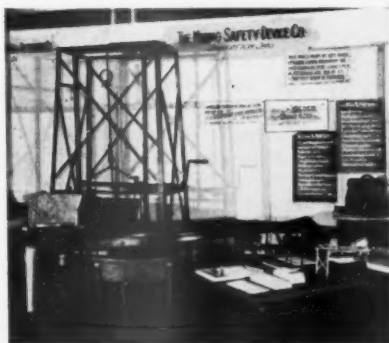
"Among the different states there are tremendous differences in the underground laws, regulations, customs and appliances that affect the accident rate more than any differences in natural conditions.

"Although there are at least twenty-three national organizations actively interested in some phase of mine safety, the industry is so vast and scattered that large districts are not reached effectively by any of these agencies.

"State mining laws and compensation insurance inspection are the two great direct factors for mine safety.

"The Bureau of Mines, through its researches, discoveries and recommendations has become the authority and haven for mine safety work in this country. The bureau has demonstrated clearly how to avoid explosions, how to use explosives, what lamps are safe, how to install and use electrical equipment, when to declare a mine gaseous, and how to reduce accidents from falls of roof and from transportation.

"The only criticism of the bureau's work must deal with what it has failed to do. In spite of the tremendous growth in the industry and of the use of underground electrical and other apparatus, the bureau has not been able to increase its mine safety investigative work sufficiently to increasingly reach the whole industry. Especially should they increase their approval or permissible system work to include all apparatus and conditions found in gassy and dusty bituminous coal mines. There should be more field engineers able to live and work personally with the operators and miners in a given district. There should be more written material, especially of a non-technical character prepared, on safety, in English and in other lan-



Coleman Car Dumper

guages, and distributed more widely in the industry. There is a wide scope for safety work to prevent dangers from falling roof and coal and from underground transportation. The bureau should do more service work in investigations of mines for the prevention of accidents as well as the follow-up investigations after accidents have occurred. It should make more safety investigations of individual mines with the object of preparing written reports to mine operators containing recommendations for modifications of, or change in, operating methods as will result in increased and more effective prevention of accidents. It should be able to work more closely in cooperation with the state mine inspection departments.

"At present there is little coordination in method and technique of investigation and inspection of mines for safety, and a great lack of knowledge of underground safety standards in general. State inspectors have one point of view, insurance inspectors another, manufacturers of equipment another, and company officials and miners still other views. A national agency like the Bureau of Mines can do much to improve and make more uniform the character and technique of mine inspection, and through investigations bring about more definite knowledge making possible the adoption of more uniform safety standards underground.

"It is a long step from proving a safety feature to a trained group of observers, and in having this feature universally adopted by the inspectors, miners, officials and operators in the industry. It needs a process of education that can only be met by having more trained bureau engineers and miners in the field in contact with the industry, cooperating with state departments, and with miners and officials' organizations."

UNIFORM SAFETY STANDARDS

Criticism was passed on Congress by John B. Andrews of New York, secretary of the American Association for Labor Legislation for its failure to acquaint the public as to the facts in the coal industry, particularly as to safety, by refusing to publish the reports of the Coal Commission. He charged that notwithstanding Congress appropriated \$600,000 for the work of the Coal Commission it balked at appropriating \$22,000 to meet the cost of printing the commission's reports. Mr. Andrews made the following recommendations:

The adoption of uniform legal minimum standards of safety.

The use underground of no explosive that is not after scientific investigation numbered among the "permissibles"; the strict limitation of "shooting off the solid"; and the use of shale or approved

rock dust to check the spread of coal dust explosions.

Reward careful employers and penalize the less scrupulous, by the universal adoption of schedule rating for insurance under accident compensation laws, with a further graduated penalty for cases of willful failure to put into effect legal safety regulations.

An adequate mine inspection staff selected upon a merit basis of training and experience, fairly paid for reasonably long tenure of office, and protected from partisan interference, whether political or industrial.

Greater public authority, federal and state, to procure and disseminate information, and to establish and maintain on a uniform basis reasonable minimum standards of safety.

Mr. Andrews pointed out that most safety work has been devoted to factories instead of to mines, which he said was due to the fact that women and children are employed in factories and the legislation has been directed in their behalf as they were more under the public observation than coal mine workers whose fields of employment are remote from large industrial centers. "The public thought of coal has been more as to its price," he said. "More attention must be directed to coal mine safety. This country has striven for greater output and for increased dividends and wages, which are legitimate, but this effort has overshadowed the importance of safety."

All witnesses before the committee were agreed that the Bureau of Mines had performed splendid work in the direction of mine safety, but that it had not reached all the people, and to do so would require increased appropriations. It was suggested that there should be additional mining stations and cars and schools of instruction in mine safety. Discussion was had as to a uniform mine safety law for all mines and it was even suggested that this might be accomplished through a constitutional amendment giving Congress power to enact such a law. The committee sought information as to mine safety regulations in vogue in European countries, which was given by Dr. George S. Rice of the Bureau of Mines, who studied European mines last year. He stated that the use of machinery in American mines has contributed to produce low cost coal but has introduced hazards which have not been sufficiently protected. Safety has not kept pace with the introduction of mechanical methods. He also noted a lack of sufficient men of engineering experience in coal mining, saying that many who are engaged do not have proper technical training. In contrast, he stated that American metal mines are well managed by technically trained men.

He advocated more rigid regulations, better inspection and better discipline in mines.

In Europe mining regulations are developed by a mines department whose orders may be enforced over the maximum requirement, while in the United States inspectors do not enforce beyond this point. Other important evidence of mine safety was given by Dr. O. P. Hood and L. C. Ilsley of the Bureau of Mines, the former discussing mechanical safety and the latter electrical safety. Organized labor, through Edgar Wallace, of the mining department of the American Federation of Labor, also advocated increased safety precautions and commended the Bureau of Mines, with which he stated labor actively cooperates.

FIRST AID MEET POSTPONED

THE international first aid and mine rescue meet, scheduled to be held at Huntington, West Virginia, in September under auspices of the Bureau of Mines, Department of the Interior, in conjunction with the Huntington Chamber of Commerce and various miners' and operators' associations and organizations, has been postponed with the approval of the Secretary of the Interior following a conference between representatives of the Bureau of Mines and the West Virginia committee in charge of arrangements.

Since the announcement of the 1924 meet was first made, the Bureau of Mines has received letters from various parts of the country indicating that in view of the depression in the coal industry, it will be very difficult to insure attendance of enough contesting teams to make the meet representative of the whole country. As these annual meets determine national championships for proficiency of contesting mine rescue and first aid teams, it is pointed out that the meet would automatically cease to be national in scope unless a sufficient number of teams come from widely enough distributed points.

A new kind of flexible ventilation tubing which has had a wide use in metal mines is now being installed in many coal mining operations throughout the country. A study of the effects of the new tubing made by specialists in many mines under various conditions has shown that its results are highly economical. A booklet just published by the du Pont Company, the manufacturers of the tubing, gives full details concerning its installation, use and its advantages.

American exports of mining and oil well machinery increased \$300,000 in 1923.

MINE INSPECTORS INSTITUTE MEETS

Annual Meeting—Fourteen States Represented—Many Changes Proposed In State Mining Laws—Safety Measures Urged

THE Mine Inspectors Institute of America held their annual meeting at Cincinnati, Ohio, May 14, 15 and 16, 1924. For two days preceding the meeting of the institute a special committee appointed by James Sherwood, president of the institute, and comprised of James Dalrymple, chief mine inspector, Denver, Colo.; R. M. Lambie, chief of State Department of Mines, Charleston, W. Va., and J. J. Rutledge, chief mine engineer, State of Maryland, were engaged in preparing an outline of suggestions for proposed changes in state mining laws so as to reduce accidents and mine disasters. These suggestions were embodied in eleven sections and were presented to the institute and discussed by all members present. Fourteen states and organizations were represented at the meeting and it is believed that this meeting of the institute will prove to be one of the most valuable ever held.

The date set for the institute was made at the institute meeting in Pittsburgh, Kans., last July and while the National Coal Association and the American Mining Congress meetings overshadowed the meeting of the institute, it is felt that notwithstanding this fact some very good work was accomplished at the meeting of the institute.

The new officers of the institute are: James Dalrymple, president; G. B. Butterfield, general manager of the Associated Companies, Hartford, Conn., secretary; J. J. Rutledge, treasurer.

The proposed changes in state mining laws are as follows:

Section I:

It is the desire of the Committee of the Mine Inspectors Institute of America that the state coal mining laws of the various coal-producing states of the United States be so amended that by January 1, 1926, or as soon thereafter as the state legislatures are convened, the use of open lights be prohibited in all coal mines, except anthracite mines, delivering coal on rail or water, and in all other mines where in the opinion of the State Mine Inspection Department, it is necessary;

Provided, That in mines where the approved electric cap lamp is used, approved flame safety lamps shall be used in conjunction with the cap lamps at all places designated by the district mine inspector.

Section I-a: *Lighting*

All lights used for testing purposes shall bear the approval of the United States Bureau of Mines, and shall be

magnetically locked and igniter maintained in a safe and serviceable condition. Mines not shipping coal by rail or river shall be required to comply with the above regulation, at the discretion of the inspector of the district in which the mine is located.

Section II: *Permissible Explosives*

Only permissible explosives shall be used for blasting coal in any coal mine except anthracite mines, and the amount of such explosive used in any one hole shall not exceed the amount approved by the United States Bureau of Mines. A permissible explosive shall be considered as one which has been classed as permissible by the United States Bureau of Mines and then used only in such quantities and under such conditions as have been approved by the United States Bureau of Mines. (Motion carried as to Section II.)

Section III: *Shot Firing*

In all coal mines all shots shall be inspected, charged, tamped and fired electrically by certified shot-firers. (Adopt clause as it is.) All shots shall be tamped to the mouth of the hole with clay or other incombustible material.

It is the consensus of opinion of this committee that the use of air chambers in drill holes results in an improved grade of coal and in a more efficient use of the explosives. (All shots shall be inspected, charged, and tamped by certified shot-firers and the handling of dets shall be only by the shot-firers.) Every miner fire his own shots and notify of missed shots.

In all coal mines all shots shall be inspected, charged, tamped and fired electrically by certified shot-firers. Shot-firers to test for gas before any shots are fired and shall not fire any shots in any place where gas can be detected by an improved safety flame lamp. Handling of detonators shall only be by the shot-firer. All shots shall be tamped with clay or other incombustible material. (Carried.)

Section IV: *Solid Shooting*

Coal that is mined or sheared is not classed as solid shooting.

No shot holes shall be drilled deeper than the shearing or mining.

Where coal cannot be mined or sheared, that the maximum thickness of the shot shall not exceed four feet.

No coal shall be shot off solid where other methods are adaptable. (Carried.)

Section V: *Rock Dusting*

All haulage-ways, air courses and pro-

ductive entries shall be rock-dusted from the mine opening to the room necks.

SPRINKLING

Provided that where rock-dusting is not done in the manner above described then all mines shall be equipped with efficient sprinkling apparatus and the sprinkling so done that the moisture shall be thirty (30) percent of the volume of the dust, or the road and rib dust can be squeezed into a compact mass in the closed hand. This condition to exist at all points from the portal of the mine to all working faces.

ROCK DUST BARRIERS

Rock dust barriers shall be installed at the entrances to all the above-named openings and to all openings to old workings; provided, that where rock dusting is done, as provided for immediately above, then all coal mines shall provide and maintain water lines in all working places of sufficient size and pressure to furnish water in sufficient quantities for sprinkling purposes to wet down all coal dust that may arise and accumulate in and around the working face. (Section V adopted.)

Section VI: *Water on Mining Machines and Tractive Mechanical Loaders*

Coal cutting machines and tractive loading machines shall not be operated in coal mines other than anthracite, unless equipped with a supply of water applied in such a manner as to wet down and prevent the raising of fine coal dust into suspension in the air.

Provided, That the electrical motors on the mining machines and tractive loading machines shall bear the approval plate of the United States Bureau of Mines. (Section VI adopted.)

Section VII: *Ventilation*

Accumulated gas shall not be permitted to exist after discovery in any mine longer than may be necessary to remove such accumulation and such an accumulation shall not be removed in such a manner as to endanger the lives of the men in the mine. (Section VII adopted as read.)

Section VIII: *Maintenance of Air Courses*

In order to insure an uninterrupted circulation of air throughout mine workings it is recommended that all air courses be securely and amply timbered and maintained and kept free from obstructions. Non-inflammable material shall be used in the construction of all permanent stoppings and over-casts and under-casts. (Section VIII adopted.)

Section IX: Responsibilities of Mine Officials

Superintendents shall be held equally responsible with the mine foremen for the enforcement of safety in and about mines. All mine officials shall be required to pass an examination and possess a certificate of competency from the State Department of Mines. (Section IX adopted.)

Section X: Tenure of Office

Since state mine inspectors are

charged with the general protection of life and mining property it is recommended that such mine inspectors shall be men who possess experience, technical knowledge and character, and shall hold office free from political influence and continue in office under the merit system.

It is further recommended that such mine inspectors shall be at least thirty years of age and shall have had at least ten years of practical experience in mines. (Adopted.)

may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

ZINC INSTITUTE IN ANNUAL SESSION

(Continued from page 254)

Joplin, spoke briefly, as did H. A. C. Jenison, of the senate's gold and silver inquiry commission.

The Tuesday morning session was devoted to the reading of papers by H. A. C. Jenison, on the "Utilization of our National Resources," J. H. Wadleigh, on "Zinc Mining is a Business," and W. J. Nolle, non-ferrous metal editor of the Daily Metal Trade, on "How the Price of Zinc is Made."

Seven directors to serve for three years were elected at the morning session, as follows: Charles W. Baker, American Zinc, Lead and Smelting Co., New York; P. B. Butler, Barnsdall Zinc Company, Joplin; Julius W. Hegeler, Hegeler Zinc Co., Danville, Ill.; John A. McCarthy, Anaconda Copper Co., New York; William A. Ogg, American Zinc, Lead and Smelting Co., Boston; Jesse G. Starr, Quinton Spelter Co., Joplin; and, Henry S. Wardner, New Jersey Zinc Company, New York.

Besides electing A. E. Bendelari president, the board of directors elected at their noon meeting J. G. Starr, John A. McCarthy and A. P. Cobb, New Jersey Zinc Co., New York, vice-presidents. Howard I. Young, American Zinc, Lead and Smelting Co., Mascot, Tenn., and Stephen S. Tuthill, New York were re-elected treasurer and secretary, respectively.

The afternoon and closing session of the two-day meeting was devoted to the auxiliary meeting of the United States Bureau of Mines, at which George C. Stone presided. Papers were read by Dorsey A. Lyons, W. H. Coghill, B. M. O'Hara, C. E. van Barneveld and Arthur Thatcher, and a paper was read, written by C. E. Siebenthal, on "Keeping Zinc Books for the Government."

It was voted to hold the next annual meeting at St. Louis.

RADIO AND MINE ACCIDENTS

DEVELOPMENT of a line-radio or "wired-wireless" system, by which trolley wires, mine tracks, compressed air and water piping, cables and similar "carriers" are utilized for voice-transmission purposes, promises the solution of the difficult problems of establishing methods of communication between underground mine workers and the surface which would be reasonably sure to withstand the severe disturbances occasioned by mine explosions, according to J. J. Jakosky, assistant engineer, Department of the Interior, who is making a special study of the matter at the Pittsburgh experiment station of the Bureau of Mines.

In tests recently conducted in a coal mine 400 feet deep, no difficulty was experienced on the surface in receiving radio messages from a transmitting set mounted upon a mine locomotive as long as the apparatus was in the vicinity of metallic carriers. The Bureau of Mines experiments indicate that the transmitting range of a radio set in the average coal mine is only a few hundred feet when no conductors are present, but may be several thousand feet when operating in proximity to metallic carriers. The bureau found that breaks in the metallic conductors do not completely stop communication as in the case of a break in the lines connecting the ordinary mine telephones. Fire, falls of rock and roof, explosions, mine flooding and other mine disasters which might cause one or more breaks will not completely destroy the conductors, and communication between underground workings and the surface could probably be established.

The installation of line-radio apparatus is quite simple. The Bureau of Mines considers, however, that the general adoption by the mining industry of line-radio as a potential means of communication in mine-rescue work hinges upon the development of a system capable of use in the everyday operation of a mine. While it is highly desirable that such mine communication rescue sets be maintained underground ready for use in cases of emergency, the capital invested in idle equipment while

"waiting for something to happen" offers a serious obstacle. If such signal apparatus can be made sufficiently practicable to be used as an everyday mine communication system, miners would soon become acquainted with the operation and care of the equipment, and in case of a mine disaster such familiarity



An Experimental Radio Set

with the operation of the apparatus would be of far more value than any short course of training which might be given miners for the operation of a purely rescue apparatus. Maintenance and inspection service would be justified for other reasons besides the purely humanitarian viewpoint of safety. Purchase of sets, and maintenance and apparatus costs could be charged to operating rather than to safety expenditures, and there is always more money available for the former class of expenses.

The installation of a line-radio telephone set is simple, it being necessary only to lay a wire 25 to 50 feet long on the ground or stretch it along the wall or roof and in a direction approximately parallel to "carriers," or to directly couple the set to such conductors by the use of suitable capacities or inductances. As far as actual installation of apparatus is concerned, the line-radio is considerably simpler and can be installed in a much quicker time than the present underground mine telephone.

Details of the tests above described are given in Serial 2599, copies of which

NATURAL GAS LINE

The Linde Air Products Company is beginning work on a 16-inch steel pipe line 210 miles long, for carrying high pressure natural gas from Shreveport, La., to Beaumont, Tex. In many ways this line is a most interesting piece of pipe work and is probably the biggest oxy-acetylene welding job ever undertaken. When the line is completed in about three months it will be a continuous tube of steel, 16 inches in diameter and 210 miles long.

MINE DEPLETION EXPLAINED

FREQUENT attacks were made in Congress on the mine depletion allowance under federal tax laws in connection with consideration of the tax revision bill. Many of these statements were wide of the mark and in order to clear up certain points on mine depletion which were not understood, the Tax Division of the American Mining Congress advanced some views. The organization explained mine depletion allowances and its administration in the following statement:

"Less than a dozen claims for mine discovery value have been allowed since 1913. In the few cases where discovery value was allowed to metal mines, the allowances for depletion were not excessive or large enough to prevent these mines from paying fair tax in comparison with taxes of others.

"Where a new ore deposit is discovered at great depth in an existing mine or mining tract, discovery value has been uniformly denied, even though the ore may be of a different character or grade from that previously known to exist, and the new tonnage thus discovered has been added to the known tonnage as of March 1, 1913, and the combined tonnage divided into cost, or March 1, 1913 value allowed, so as to cut the depletion rate in half, thus defeating the purpose of the discovery provision to the injury of the metal mining industry.

"Coal has never been allowed discovery value, nor any benefit from alleged appreciation in values. The average rate of depletion allowed on coal has been but a few cents per ton or, a nominal depletion, notwithstanding actual increases in tonnage and values in many cases. The increases in values have never been allowed to boost the depletion rate.

"In the case of oil and gas wells abuses can not occur with the 50 percent limitation proposed in the pending bill upon allowances for discovery depletion. No oil company can escape tax by reason of excessive deductions. It would be impossible under present market conditions and under the proposed limitation, for oil wells to secure unreasonable valuations for depletion purposes.

"Metal mines should have a definition in the law of what constitutes a discovery so that application of the discovery clause will not act as a depressant on the industry but rather as a stimulant that will encourage new discoveries of minerals and thus increase the tax base for state and local governments as well as greater profits upon which the Federal income tax will be assessed.

"The allowance for depletion in the case of mines, oil and gas wells and timber, is based upon the sound principle that the selling price of every ton of ore,

barrel of oil, cubic foot of gas, or 1,000 feet of timber removed, involves two elements: (a) profit, and (b) return of capital.

"Just as annual wear and tear of a house, barn, manufacturing plant, farm tractor or automobile used in business entitles the owner to an annual allowance for depreciation during the life of the property in order that it may be replaced when exhausted or worn out, so does the depletion of a mine entitle the owner to an annual sinking fund allowance that will return his capital base by the time the mine is exhausted. If this were not true, capital could not be accumulated for replacement."

COPPER EXPORT AID REFUSED

DURING congressional consideration of the proposed farm relief measures which contemplate credit facilities for the sale abroad of surplus agricultural products discussion was had as to the inclusion of mining products and others, including copper. The appeal for copper was rejected, however, and the bill as drawn is restricted to farm crops. In explaining why copper was not embraced within the provision of the bill, the House Committee on Agriculture advanced the following reasons:

"The United States stands first of the fourteen great copper-producing nations of the world.

"The average price of copper over the 10 pre-war years, 1905-1914, was 14.54 cents per pound. The average price for 1923 was 14.5 cents. In March, 1923, it was 16.95 cents. In March, 1924, it was and at the present date it is 13.62 cents, a little below the 10-year average.

"The copper producer gets his old price, but his costs, because of high labor, high materials, high freight, etc., are out of line. He has no tariff protection because he did not want any.

"American copper interests own the low-cost South American producing mines and smelters. Copper is on the free list probably because of their belief that they could make more money by importing from South America than by operating their North American properties.

"American mines and smelters increased their production in 1922 over 1921 by 37 percent—over one-third in one year.

"The farming industry, because of its nature, cannot make such kaleidoscopic changes. It takes eight years, on an average, to make one turnover in agriculture. In the face of great distress it has taken farmers four years to cut down the wheat area, 17,500,000 acres. This is a reduction of nearly 25 percent between 1919 and 1923, a shrinkage that has been accompanied by hundreds of thousands of failures and bankruptcies.

"The whole metal and metal products group constitutes in relative importance, as measured by wholesale values in exchange, 7.61 percent of all commodities. Copper constitutes 1.01 of the group.

"The farm and food-products groups combined constitute 46.99 percent of the wholesale exchange value of all commodities. Bearing in mind this 1.01 percent relative value for copper, consider that wheat and flour constitute 6.23 percent, cattle and their food products 6.54 percent, hogs and their food products 7.64 percent, and cotton and cotton clothing 7.34 percent.

"The question of why copper is omitted can be answered from still other angles. For instance, in 1921 there were 28 copper smelting and refining plants in the United States that employed an average of 9,746 persons.

"It is estimated that wheat was grown that year on 2,250,000 American farms. It is not necessary to attempt to estimate how many persons were employed in the industry.

"In the census year 1919 mining in all of its aspects employed 981,990 persons, but the copper mines of the country employed only 43,717 persons.

"The State of Maryland alone had 47,908 farm operators in 1919, and the United States had 6,448,000. Over 40,000,000 of our people are directly and vitally concerned with farming on its production and distribution sides. Not over 250,000 have the same vital concern in the production and distribution of copper.

"A further indication of the profound and fundamental difference in importance between the great farm staples and copper may be gained from a consideration of the following figures:

"The average production of copper for 10 years, 1905-1914, was 1,051,951,000 pounds (469,612 long tons).

"The average production of corn for the same 10 years was 2,694,000,000 bushels.

"The average production of pork for the same 10 years was 7,214,000,000 pounds.

"The average production of beef for the same 10 years was 6,471,000,000 pounds.

"Of lard alone the average production in the 10 pre-war years, 1905-1914, was 1,639,000,000 pounds.

"In passing it may be noted that we produce 47 percent of the world's copper and use 44 percent of the total production."

The committee says farm production cannot be diminished with the suddenness attainable in factory production and refers to the fact that production of pig iron in the United States fell from 36,415,000 tons in 1920 to 16,544,000 tons in 1924.

THE SPRING MEETING OF THE NEW MEXICO CHAPTER OF THE AMERICAN MINING CONGRESS

New Mexico School Of Mines Host—Number Excellent Papers Presented—Large Attendance

THE New Mexico School of Mines was host to the members of the New Mexico Chapter of the American Mining Congress which held its spring meeting at Socorro in the latter part of April.

The principal paper read before the chapter was "Electric Magnetic Location of Ore Bodies" which was written and presented by Mr. Hans Lundberg, who, with Harry Nathorst, another Swedish scientist of note, developed the Lundberg-Nathorst system of electrical prospecting. Briefly he gave a history of the process, told of its success in the mineral districts of Norway, Sweden, Finland and Spain, where it was used by Bergsbyran, Ltd., of Stockholm. He then explained the electrical principles and laws of conductivity upon which the system was based, and gave a demonstration, with laboratory apparatus, of how the method worked. Mr. Lundberg explained that, although some extensive prospecting had been done in the Southwest in which the method had come up to the fullest expectations of its developers, the details of results gained in the United States were not ready for publication.

Mr. Walter Arthur, a chemist and metallurgist of wide experience, gave a highly technical but comprehensive lecture on "Modern Explosives and Their Application." He not only dwelled at length upon the theory of explosives but he also gave practical laboratory demonstrations of the action of various powders and explosive oils under varying conditions. His discussion on the initiation of discharges was of particular interest to the practical mining men. In closing he predicted that T. N. T. would more than likely find more favor in the future in mining work than it has in the past.

Manager S. J. Kidder, of the Mogollon Mines Company, in his paper, "The Education of the Mining Engineer," made a strong plea for the devotion of more time to the education of men who intend to enter such a highly technical field as mining has come to be. He also expressed the opinion that more time should be given to the broad principles that form the foundation of all the fields of engineering, and that certain so-called cultural subjects, such as English and foreign languages, had been slighted in engineering curricula of the past to an unpardonable degree.

"The Mining Districts of New Mexico" was the title of a nontechnical paper

read by Prof. J. D. Hill of the New Mexico School of Mines faculty. It was a comparison of the historical and legal characteristics of the mining districts of the old Southwest to those of the Pacific Coast, the birthplace of the district regulations, out of which grew the Federal Mining Code that is in force today.

In the discussions that followed the reading of the papers, the response was liberal and highly interesting.

After the professional session a dinner was attended by the members of the chapter and their guests in the banquet room of the Val Verde Hotel. The evening session was held in the gymnasium of the School of Mines, upon the adjournment of which a smoker was given by the student organizations of the institutions.

The committee arranged the following program which was carried out according to schedule:

10.45 a. m.—Tour of inspection of School of Mines buildings and grounds.

2 p. m.—Afternoon Session—School of Mines clubroom.

Address of Welcome—Mr. E. H. Wells, president, New Mexico School of Mines.

Response—Mr. E. M. Sawyer, governor, New Mexico Chapter.

Business meeting.

"The Education of a Mining Engineer," Mr. S. J. Kidder, manager, Mogollon Mines Company.

"Modern Explosives and Their Application," Mr. Walter Arthur, professor of chemistry and assistant professor of metallurgy, New Mexico School of Mines.

"Electro Magnetic Location of Ore Bodies," Mr. Hans Lundberg, consulting mining engineer.

"The Metal Mining Districts of New Mexico," Mr. J. D. Hill, professor of English and Spanish, New Mexico School of Mines.

6.30 p. m.—Dinner—Val Verde Hotel.

8.15 p. m.—Evening Session—School of Mines gymnasium.

"The Mining Industry and Mineral Resources of New Mexico," President E. H. Wells.

Miners' Smoker—Given by the Athletic Association, the Cooney Mining Club, and the Chapter of the American Association of Engineers of the New Mexico School of Mines.

The meeting was well attended. Practically all the mine executives of New Mexico were present, among the most notable of whom were:

John M. Sully, E. M. Sawyer, Powell Stackhouse, Jr., C. T. Brown, P. H. Argall, S. J. Kidder, L. M. Kniffin, Ira L. Wright, I. J. Stauber, B. H. Kinney, Sharp Hansen.

The city in which the fall meeting will be held was not announced.

LEAD AND ZINC PIGMENTS AND SALTS SOLD IN THE UNITED STATES IN 1923

THE sale of white and sublimed lead in 1923 declined about 15 percent as compared with 1922. The decrease in quantity sold was coincident with an increase in price of about 25 percent. The sale of lead oxides, on the contrary, increased about 25 percent in 1923 in spite of an increase in price of nearly

25 percent. The quantity of zinc oxide sold in 1923 was practically the same as in 1922 although the price increased about 5 percent. The sale of lithopone, on the other hand, showed an encouraging increase, nearly 18 percent, and an increase in price of 7 percent.

LEAD AND ZINC PIGMENTS AND SALTS MARKETING IN THE UNITED STATES, 1922-23

(Compiled by C. E. Siebenthal and A. Stoll, U. S. Geological Survey.)

	Short tons	1922		Short tons	1923	
		Total	Value Per ton		Total	Value Per ton
Sublimed lead:*						
White	13,765	\$1,829,865	\$132.94	11,949	\$1,959,068	\$163.95
Blue	972	129,230	132.95	800	134,356	167.94
Red lead	30,509	5,104,290	167.30	38,037	7,611,508	200.11
Orange mineral	370	83,022	224.38	646	181,066	280.29
Litharge	58,261	8,892,172	152.63	75,107	14,059,979	187.20
White lead:						
Dry	41,598	5,785,165	139.07	37,786	6,615,114	175.07
In oil	153,393	29,728,230	193.80	125,087	27,010,116	215.93
Zinc oxide	128,465	17,994,704	140.07	126,987	18,750,972	147.66
Leaded zinc oxide...	19,613	2,251,601	114.80	23,504	2,815,985	119.81
Lithopone	83,360	9,214,040	110.53	98,199	11,608,443	118.21
Zinc chloride	41,627	2,009,147	48.27	42,431	1,958,187	46.15
Zinc sulphate	5,078	251,528	49.53	5,375	261,449	48.64

* Includes basic sulphate lead.

RETORTING OF OIL SHALE

Retorting Most Serious Problem Confronting Oil Shale Industry—Difficulties Outlined—Not A Game For Poor Man—Experiments On Commercial Scale Advocated

By VICTOR C. ALDERSON
President, Colorado School of Mines

THE most serious problem confronting the oil shale industry, both theoretically and practically, is the retorting of the shale: that is, the actual production of good oil from shale. The problem as it appears outside of Scotland is exceedingly difficult of solution. Many errors and failures have been made, primarily because of a failure to understand the principles involved. Too often experimenters, ignorant of organic chemistry and unfamiliar with high temperature work, have wasted time and money on futile attempts to solve a problem difficult even for the expert.

Destructive distillation is a complex operation. To make the operation clear to the lay reader a homely illustration is necessary. The cook in the kitchen puts together flour, water, yeast, and other ingredients, and produces dough. But the dough is not bread until it is cooked, although it contains the ingredients of bread. A good cook is necessary to produce good bread. In the case of oil shale there is no oil, as such, in true oil shale but the chemical ingredients, carbon and hydrogen, of oil and gas are in the shale in the form of plant and animal remains. If now the oil shale is placed in an air tight retort and heated sufficiently, the carbon and hydrogen break away from their condition as plant and animal matter and rearrange themselves in the form of oil and gas. Thus oil shale is not in itself gas and oil, but it contains the ingredients of gas and oil. On being cooked, as dough is cooked to produce bread, gas and oil result. The illustration is easy to understand, the problem simple to state, but the solution is difficult.

The successful retorting of oil shale has been carried on in Scotland for many years. When oil shale deposits were exploited in other places it was erroneously assumed that all oil shales were alike and that a Scottish retort was all that was necessary. It was a costly lesson to learn; that the Scottish retort was successful only on low grade shales and was a total failure on rich shales. This is the error which resulted so disastrously in New South Wales. It is now recognized very clearly, by all experimenters, that oil shales vary greatly in their oil yield, the amount of nitrogen and consequent yield of ammonium sulphate, and the amount of sulphur. For this reason experimental work must first be done on an average

of the shale to be retorted, in order to determine its chemical composition and characteristics; this work should be followed by a pilot retort as a guide to a larger retort; finally, a minimum sized commercial retort should be constructed in the field on the site of the expected operations. If this procedure is followed it is unlikely that failure will follow. In such work it must be borne in mind that a retort, to be commercially successful, must have a large daily throughput, must be simple of design, automatic in operation, economical in first cost, continuous in operation and, as far as possible, fool proof. In operation it must produce the maximum of good oil at a minimum expense.

The oil shale game is not for the poor man. Large sums of money are required because an entire plant must be erected and put in operation before there can be any financial return from the sale of products.

Various types of retorts have been proposed of which there are two main varieties—the vertical and the horizontal. The vertical, of which the Scotch is the best known, is of small daily throughput, expensive, and adapted only to lean shales; that is, shales that yield only from 20 to 25 gallons of oil to the ton. It is well adapted to the production of ammonium sulphate because of the ease of injecting superheated steam at the base. The Scotch retort can, however, be modified so as to make it successful in handling rich shales. This is notable in the German retorts erected in Esthonia, in the new retorts of Burma-Siam and Tasmania, and in the Catlin plant in Nevada.

In the horizontal, or inclined, type of retort a serious difficulty to be overcome is to advance the shale through the retort without having moving parts within the retort where the heat approximates 900 degrees F. This difficulty is overcome by having fixed blades extending from the periphery of the retort towards the center and sloped so that as the retort revolves the shale is carried forward. Much of the success of any retort depends upon the control of the heat, the fineness to which the shale is broken, and the removal of vapors as soon as formed.

A survey of the entire oil shale field

shows that the world supply of oil shale as a source of oil is virtually inexhaustible, that oil from wells has an exhaustion point not far distant, and that oil from shale forms our permanent dependable source of supply. Since the distillation of oil shale forms the main problem to be solved it would be wise for the government, in the light of the future economic welfare of the entire country as well as a safeguard in time of war, to inaugurate a series of experiments on a commercial scale to determine what character of retorts are best adapted to the various deposits in this country. Inasmuch as the United States has the greatest oil shale deposits in the world the movement would be in harmony with the importance of the United States, both economically and industrially, for all time.

OIL SHALE EXPERIMENT STATION

FOR the first time in the development of the oil shale industry high governmental officials have given recognition to the status and the needs of the industry. A conference has recently been called by Senator Lawrence C. Phipps of Colorado at the office of Dr. Work, Secretary of the Interior Department. At this conference there were present, besides Senator Phipps and Secretary Work, Secretary Hoover and Secretary Wilbur, Dr. George Otis Smith, Admiral H. P. Jones, H. F. Bush of California, Lieut. Commander R. M. Robertson, James F. Callbreath, Secretary of the American Mining Congress; H. Foster Bain, director of the United States Bureau of Mines; Prof. W. V. Norris, Colorado School of Mines; Col. E. D. Milliken of Denver, and Dr. Victor C. Alderson, president of the Colorado School of Mines and chairman of the Oil Shale Section of the American Mining Congress.

The needs of the industry were exhaustively considered after a talk by Dr. Alderson in which he explained the situation and showed the need of a governmental oil shale experimental plant on the Naval Reserve in Colorado. He emphasized the fact that the Naval Oil Shale Reserve had been well selected because of its proximity to the Grand River, the rich deposit of shale which it contains, the nearness to railroad transportation, and the numerous natural retort sites available. He called attention to the fact that in the mining of shale at the naval reserve much infor-

mation will be obtained as to the cost of mining because the outcroppings on the naval reserve are very numerous. Retorting problems solved at this plant will be applicable to deposits in the other parts of the country where oil shale is found; notably in California, Oregon, Nevada, Montana, Utah, Wyoming, Colorado, Ohio, Indiana, Pennsylvania and Kentucky.

After Dr. Alderson's general discussion of the subject Secretaries Hoover, Work and Wilbur showed keen interest to a long series of questions put to Dr. Alderson and answered by him. In order to give a clear impression of the subject Dr. Alderson and Professor Norris brought to Washington from the Colorado School of Mines a working exhibit. This was installed in the auditorium of the Interior Department and was inspected by those present at the conference of Congressmen and Senators. This exhibit consisted of four vertical retorts, electrically heated, in which the gas and oil were produced before the visitors. The gas thus produced was burned with a long steady flame. The crude oil was placed in a separate apparatus and gasoline distilled. The working of this exhibit, practical and spectacular in its features, brought forth exceedingly favorable comments. In addition to this working equipment there was a wide variety of samples of oil shale from all over the world, as well as samples of the by-products that can be produced from crude shale oil. A special feature was a large number of paperweights made from the celebrated mahogany shale of Grand Valley, Colorado, which Dr. Alderson presented to the members of the conference as souvenirs. The deposit from which this mahogany shale comes yields 70 gallons of oil to the ton, is 8½ feet thick, and is the richest bed of oil shale in the United States.

OIL SHALE NOTES

THE Trumble Oil Shale process, now being developed by Milton J. Trumble at Alhambra, California, is reported by experts, who have examined it to be headed for success. Mr. Trumble hesitates to publish a complete description of it until he feels assured of its successful operation. It may be said, however, that the retort is of the vertical type with three heating zones. Much experimental work has been done on shale in ton lots. The latest to be tried out is a ton of oil shale from DeBeque, Colorado.

The Catlin Oil Shale plant at Ilko, Nevada, is now on regular commercial operation and is the first in the United States to reach that stage of progress. The plant operates continuously for the twenty-four hours of the day. The

daily throughput is 150 tons of shale which yields 4,000 gallons of crude oil, or 26 2-3 gallons to the ton. The crude oil is treated at the plant and yields gasoline, lubricating oil, and wax, all of which are marketed.

J. H. Ginet, President of the Monarch Oil Shale Company, is taking personal charge of the work of completing the plant at DeBeque, Colorado. He plans to be in full operation in May. If so, Monarch will be the second oil shale plant to be put on a commercial basis in this country.

T. Kimura, the leading oil shale expert of Japan, who has done experimental work on the oil shale deposits in the Fushan Coal Mines of Manchuria, is now in this country investigating the status of the industry. He visited the Colorado School of Mines in recognition of the advanced work being done there. He will proceed to Scotland to supervise a test of Manchurian shale in the Scottish retort.

The oil shale output in Esthonia has increased from 46,125 tons in 1920 to 206,000 tons in 1923. All the year work is in progress at the two government mines at Kohtla and Kukruse. Only a small part of the product is distilled to produce oil. Most of the oil shale is burned raw in cement plants, on railways, and in gas works. The product for 1924 is estimated at 300,000 tons.

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LEGISLATIVE REVIEW

(Continued from page 258)

27.5 percent ad valorem; and those of copper, brass, steel or other base metal not specially provided for at 20 percent ad valorem.

S. 2570. Reported by the Committee on Commerce. This proposes to establish foreign trade zones in ports of entry in the United States to expedite and encourage foreign commerce.

Tax Revision

H. R. 6715. Passed by House and Senate and now in conference to adjust Senate amendments. This is the general tax revision bill.

Tax Assessments

S. 3273. Introduced by Mr. Shortridge (Rep., Calif.). Referred to the Finance Committee. It provides:

"That if the taxpayer has on or before January 1, 1925, filed a waiver of his right to have the taxes due for the taxable years 1917 or 1918 determined and assessed within five years after the return was filed, such credit or refund relating to the taxes for the year in respect of which the waiver was filed shall be allowed or made if claim therefor is filed either on or before April 1, 1925, or within two years from the time the tax was paid; and the consent of the Commissioner of Internal Revenue shall not be necessary to the filing of such waiver in any case where the assessment, credit, or refund results from a changed construction of law or a change in the regulations under the revenue acts."

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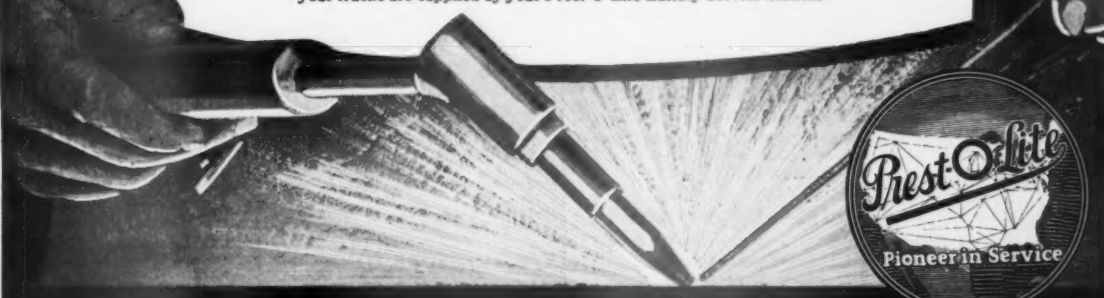
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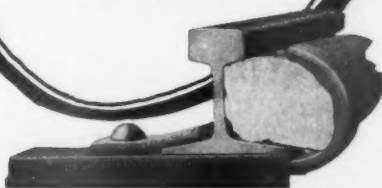
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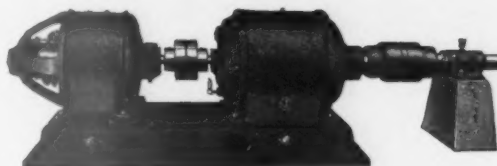
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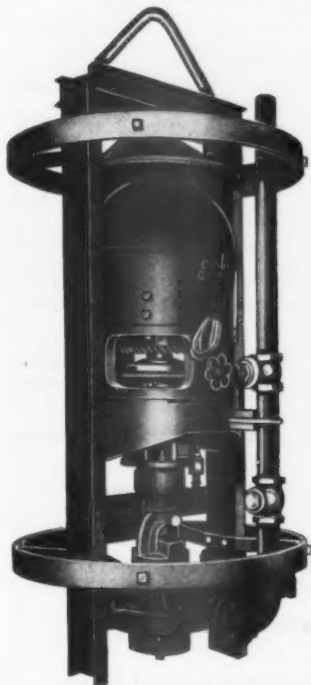
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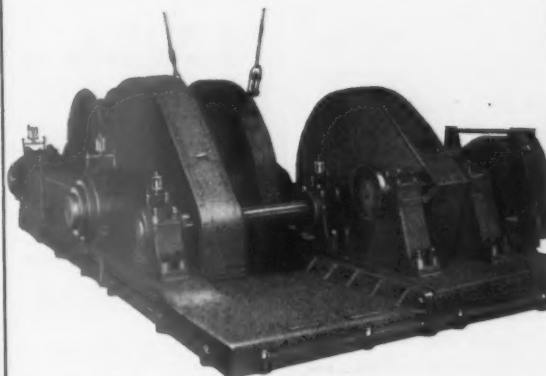
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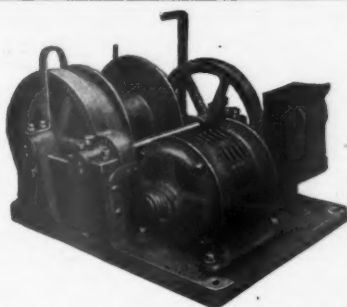
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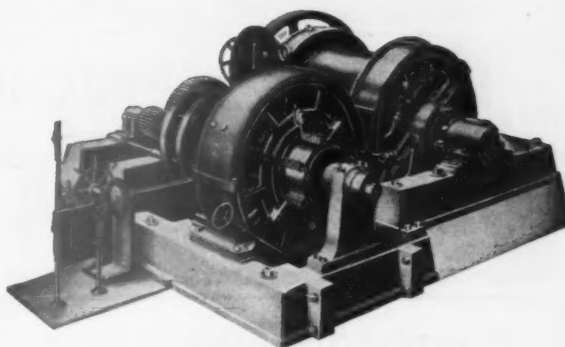
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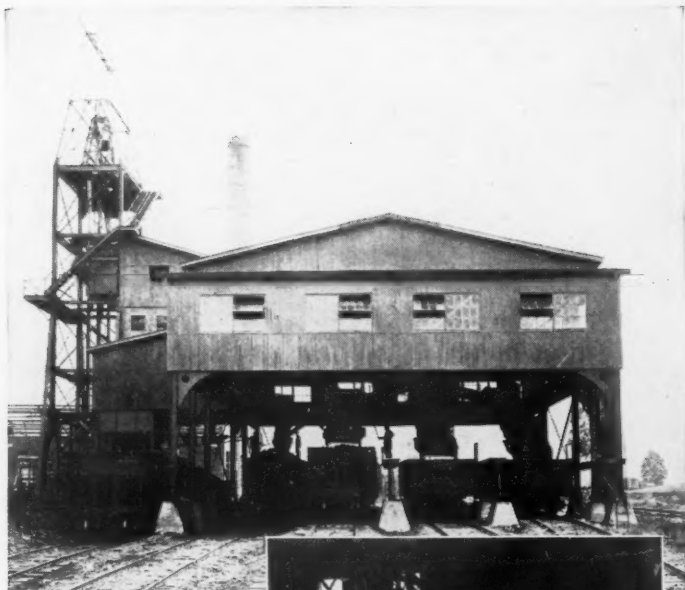
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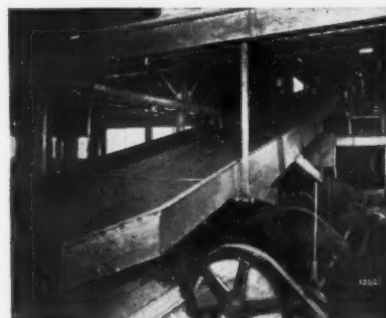
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